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Preterm birth after the introduction of COVID-19 mitigation measures in Norway, Sweden and Denmark: a registry-based difference-in-differences study

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Conflicts of interest

The authors report no conflict of interest.

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Condensation: In this difference-in-differences analysis of births in Scandinavia, there was no evidence of an impact of COVID-19 mitigation measures on the incidence of preterm birth.

Short title: Preterm birth and COVID-19 mitigation measures in Scandinavia

AJOG at a Glance:

Why was this study conducted?

- This study aimed to assess the impact of COVID-19 mitigation measures on the incidence of preterm birth.

What are the key findings?

- In this difference-in-differences analysis of births in Scandinavia, there was no evidence of a change in the incidence of preterm birth following the initial introduction of COVID-19 mitigation measures in 2020.

What does this study add to what is already known?

- Previous studies have reported conflicting findings. These studies have predominantly been based on data from healthcare facilities and are potentially underpowered and unrepresentative, and have not always accounted for temporal trends in preterm birth.
- This analysis of national registry data from three countries with varied levels of 'lockdown' provides no evidence of an indirect impact of the COVID-19 pandemic on preterm birth.

Abstract

Background: Although some studies have reported a decrease in preterm birth following the start of the COVID-19 pandemic, findings are inconsistent.

Objective: This study aimed to compare the incidence of preterm birth before and after the introduction of COVID-19 mitigation measures in Scandinavian countries, using robust population-based registry data.

Study design: Registry based difference-in-differences study using births from January 2014 through December 2020 in Norway, Sweden and Denmark. Changes in preterm birth (<37 weeks) rates before and after introduction of COVID-19 mitigation measures (set to March 12, 2020) were compared to changes in preterm birth before and after March 12 in 2014-2019. Differences per 1000 births were calculated for 2, 4, 8, 12 and 16 week intervals before and after March 12. Secondary analyses included medically indicated preterm birth, spontaneous preterm birth, and very preterm (<32 weeks) birth.

Results: 1,519,521 births were included in this study. During the study period 5.6% of births were preterm in Norway and Sweden, and 5.7% in Denmark. There was a seasonal variation in the incidence of preterm birth, with highest incidence during winter. In all three countries, there was a slight overall decline in preterm births from 2014 to 2020. There was no consistent evidence of a change in preterm birth rates following the introduction of COVID-19 mitigation measures, with DiD estimates ranging from 3.7/1000 births (95% CI -3.8 to 11.1) for the first two weeks after March 12, 2020, to -1.8/1000 births (95% CI -4.6 to 1.1) in the 16 weeks after March 12, 2020. Similarly, there was no evidence of an impact on medically indicated preterm birth, spontaneous preterm birth, or very preterm birth.

Conclusions: Using high quality national data on births in three Scandinavian countries, each of which implemented different approaches to address the pandemic, there was no evidence of a decline in preterm births following the introduction of COVID-19 mitigation measures.

Keywords: preterm birth, COVID-19, pregnancy outcomes, Scandinavia, retrospective

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Introduction

A growing number of studies have attempted to assess the indirect consequences of the coronavirus disease 2019 (COVID-19) pandemic on key health indicators. It has been speculated that one of these indirect consequences is an impact on birth outcomes, including a change in the prevalence of preterm birth. Suggested potential mechanisms for such an impact include hypothesises about improved air quality (due to strict lockdown measures), prevention of infections which may otherwise trigger preterm labour[1-3]; and changes to health seeking behaviour. On the other hand, pregnant women have experienced added anxiety about COVID-19 infection, alongside the negative impacts of employment and income insecurity, home-working, home-schooling and reduced social support.[4-6] Additionally, many settings experienced changes in health care access and availability. [7] A recent meta-analysis identified 16 studies assessing the impact of the COVID-19 pandemic on preterm birth, 12 of which were conducted in high-income countries (HIC).[8] Although these individual studies reported conflicting findings, subgroup analysis of the HIC studies suggested some evidence of a significant decrease in the incidence of preterm birth following the start of the COVID-19 pandemic. Most existing studies are based on data from selected health care facilities or limited to regional data, and are therefore small, potentially underpowered and not representative of the general population. Additionally, temporal and seasonal trends in preterm birth[9] have not always been adequately accounted for. There continues to be insufficient evidence to conclude an impact of COVID-19 mitigation measures on preterm birth,[10] particularly when focusing on longer periods of lockdown and specific preterm birth subtypes.

Norway, Sweden, and Denmark are similar countries in many ways, particularly in terms of universal healthcare, levels of income inequality, and fertility patterns. At the time when COVID-19 was first designated a pandemic by the World Health Organization (March 13, 2020), COVID-19 rates were similarly low in all three countries. Subsequently, each country pursued policy measures in attempt to minimise the impact of COVID-19, with both Norway and Denmark introducing relatively strict lockdown measures in mid-March, while the approach in Sweden was initially somewhat less restrictive.[11-13] All three countries saw substantial changes in the behaviour of citizens from mid-March onwards with decreasing use of public transportation, less workplace commuting and more time spent at home.[14] The available behavioural indicators suggest that the strict lockdowns of Norway and Denmark lockdown translated into larger behavioural changes than in Sweden.[15]

With national registry-based data from Norway, Sweden and Denmark, we used a difference-in-differences (DiD) design to assess the impact of COVID-19 mitigation measures on the incidence of preterm birth.

Materials and Methods

Data sources and study population

Records of births at ≥22 weeks gestation occurring between January 1, 2014 and December 31, 2020 were obtained from the Medical Birth Registry of Norway,[16] the Swedish Pregnancy Register,[17] the Danish Medical Birth Register,[18] the Danish National Patient Registry,[19] and the Danish Civil Registration System.[20] In Norway and Denmark, all births are included in the registry sources; in Sweden, 92% of births are included in the national register. Further details of data sources are listed in the appendix (Supplemental Table 1). Births with multiples were counted as one record only.

Ethical approval

This study was approved by the Regional Committee for Medical and Health Research Ethics of South/East Norway (#141135), the Swedish Ethical Review Authority (approval numbers: dnr 2020-01499, dnr 2020-02468, dnr 2021-00274). Each committee provided a waiver of consent for participants. In Denmark, the study was registered with the Danish Data Protection Agency via the University of Southern Denmark (reg. no. 364 20/17416) and via Statistics Denmark.

Exposure

The DiD design requires a time point on which to split between an unexposed 'pre' period and an unexposed 'post' period. Although the intensity and timing of COVID-19 mitigation measures differed between the three countries, the majority of measures were introduced around March 12, 2020 (Table 1). Thus, March 12, 2020 was used as the cut-off date for all three countries.

Preterm birth

We defined preterm birth as the birth of at least one live or stillborn infant before 37 completed weeks of pregnancy. Preterm birth was further stratified into medically indicated preterm birth (resulting from induction of labour or a pre-labour cesarean section) or spontaneous preterm birth (birth after spontaneous onset of labour). We included very preterm birth (<32 weeks) as an additional outcome. Further details on the definition of outcomes are included in the appendix (Supplemental Table 1).

Statistical analysis

The DiD design mimics experimental methods by comparing changes in an exposed to those in an unexposed group.[21] Specifically, we exploit the exogenous nature of the mid-March lockdown: Everyone is exposed. However, since the exposure is fixed in time (mid-March 2020) the naïve comparison of before and after the introduction of lockdown measures might be confounded by any factor that is correlated with time, e.g. seasonal effects or changes in the characteristics of pregnant women. In the DiD design this is solved by comparing the changes before and after March 12, not only in 2020, but also in previous years. In this study we compared the rate of preterm birth in the weeks before and after the introduction of COVID-19 mitigation measures in 2020 (March 12, difference 1) to the difference in preterm birth rates before and after March 12 in earlier years (2014-2019, difference 2). The DiD estimate is the difference between these two differences, obtained using linear probability models with robust standard errors and presented as a risk difference in points per 1000 births. Statistically, we use an interaction term between pre-post lockdown and year to derive the DiD estimate. By including year and week fixed effects this approach accounts for background trends in birth outcomes[22], including seasonal trends. The DiD estimate can be interpreted as the change in birth outcomes that are related to implementation of the COVID-19 mitigation measures in the various countries, beyond background trends in season and year. If there is no relationship between COVID-19 mitigation measures and subsequent birth outcomes, then the DiD estimate would be equal to 0. We accounted for clustering by mother where this information was available (Norway and Sweden). To allow for a time lag between the introduction of the COVID-19 mitigation measures and a potential impact on preterm birth, we modelled five different time intervals: 2 weeks after March 12 compared to 2 weeks before, and similar comparisons for intervals of 4, 8, 12 and 16 weeks. We first ran a model for any preterm birth, and then additional models for medically indicated preterm birth, spontaneous preterm birth, and very preterm birth. The parallel trends assumption was explored using visual inspection of pre-trends.

Individual data sharing was not possible between countries due to privacy restrictions; therefore, the DiD analyses were conducted within each country separately according to a standardized common study protocol. Pooled DiD estimates were generated using a random–effects meta-analysis with inverse variance weighting of individual-country results. Heterogeneity was assessed using the I^2 statistic, calculated as 100% × (Q–df)/Q, where Q is Cochrane's heterogeneity statistic and df denotes degrees of freedom.[23] Analyses were performed using SAS EG version 9.4 and Stata version 16.

Results

There were 1,552,401 births between 2014 and 2020 in the three countries. After excluding 32,880 births with missing gestational lengths, gestational age below 22 weeks, unknown outcome, or second or higher order births from a multiple pregnancy, 1,519,521 births were included in our study population (392,586 in Norway, 713,121 in Sweden, 413,814 in Denmark; Supplemental Figure 1). The proportion of preterm birth (<37 completed weeks) was similar across all three countries, 5.6% in Norway, 5.6% in Sweden, and 5.7% in Denmark, respectively (Table 2). In all three countries there was a slight decline in the proportion of preterm birth between 2014 and 2020 (Supplemental Tables 2-4).

Figure 1 presents the weekly incidence (using a three-week rolling average) of preterm birth between January 2014 and December 2020, with week 11 (which includes the cut-off date, March 12) indicated by a vertical dashed line. There was a clear general seasonal trend in preterm birth, with the incidence peaking in the early winter months, and the lowest levels observed in late summer and early fall. Notably, in most years the incidence of preterm birth steadily declined during the first three months of each year.

The DiD analyses included 895,945 births occurring in the period 16 weeks before and after March 12 from 2014 to 2020 (234,517 in Norway, 421,544 in Sweden, 239,884 in Denmark). There was no evidence that the parallel trends assumption was violated in any of the three countries (Supplemental Figure 2). The DiD estimates for preterm birth with different weekly intervals are presented in Figure 3 (source data in Supplemental Tables 5-7). For all time intervals there was no discernible difference in the country-specific incidence of preterm birth after lockdown. There was no evidence of heterogeneity in the meta-analysis, and pooled estimates did not show an overall decrease across the three countries.

Similarly, when preterm birth was stratified into medically indicated or spontaneous, there was no convincing difference in country-specific prevalence following March 12, 2020 in any of the three countries (Figure 4). As with the overall preterm birth analysis, there was no evidence of heterogeneity and pooled estimates did not provide evidence of a change in the incidence of either medically indicated or spontaneous preterm birth.

The introduction of COVID-19 mitigation measures had no impact on incidence of very preterm birth (<32 completed weeks) in any of the three countries (Supplemental Figure 3).

Comment

Principal findings

We found no convincing evidence to support a change in the incidence of preterm birth following the introduction of COVID-19 mitigation measures in Norway, Sweden and Denmark. Similarly, the rates of very preterm birth (<32 completed weeks) did not appear to decline after lockdown in any of the Scandinavian countries. The findings were similar when evaluating medically indicated or spontaneous preterm births separately.

Results in the context of what is known

There have been reports of decline in preterm births after the onset of COVID-19 pandemic in HICs[8, 24-36] although findings are inconsistent.[37-42] Pooled estimates from a recent meta-analysis suggest a modest decrease in overall preterm birth in HICs only, and also a reduction in spontaneous preterm birth but not medically indicated preterm birth,[8] although the latter finding rests on results from only two hospital-based studies.[25, 37] Notably, an earlier analysis of Danish data comparing births in the month following lockdown to births in the same interval in earlier years concluded that there was a decrease in extremely preterm birth after lockdown, but no similar trend for later preterm births.[27] However, this was based on only one extremely preterm birth recorded for the 2020 study period. A short report comparing births in Sweden before and after the start of COVID-19 pandemic did not find any association between birth during the COVID-19 pandemic and preterm birth,[42] consistent with the findings reported here. The general inconsistency in results across previous studies likely reflects methodological heterogeneity, selection criteria, and lack of ability to minimise bias caused by existing seasonal and time trends in preterm birth, and also low power for rare outcomes such as preterm birth subtypes.[10] In addition, inconsistencies in results may reflect heterogeneity in mitigation measures as well as differing population and health system characteristics.

Although the three Scandinavian countries have similar culture, populations and health care systems, at the beginning of the pandemic there was a major difference in the approach to policies and interventions designed to mitigate the COVID-19 pandemic.[12, 13] Both the Norwegian and Danish governments swiftly introduced emergency legislative powers allowing them to implement domestic restrictions that would otherwise be constitutionally unlawful. One key difference between the three countries relates to education closures: in mid-March 2020 all schools were closed in Norway and Denmark, whereas Sweden followed some days later with only a recommendation for high schools and universities to close. There was also stronger advice to work from home in both Norway and Denmark. Although the three countries had similar rates of COVID-19 cases on March 12, by July 2, 16 weeks into the pandemic, the cumulative confirmed COVID-19 deaths per million people was 46.3 in Norway, 104.62 in Denmark and 535.8 in Sweden.[14] Trust in government is generally high across all three countries,[43] and there is evidence of high compliance with the mitigation measures which were introduced as a result of the pandemic.[44] Adherence to public health recommendations around social distancing and hygiene almost certainly contributed to an abrupt end to the 2019/20 influenza season in the three countries,[45] with some evidence that these measures also contributed to a decrease in non-COVID 19 respiratory infections.[46] Although there was likely some changes to healthcare in the three countries immediately following the start of the pandemic, these were likely to predominately be reflected in reductions in elective care rather than changes in the provision of essential maternal health services.

While the results from the meta analyses lacked evidence for a decrease in preterm birth for any of the defined time intervals, it is notable that in Norway estimates were negative (suggesting a decrease after March 12, 2020) for the overall preterm birth outcome for the 8-, 12- and 16-week intervals. The fact that these trends were only observed for the longer time intervals following March 12, 2020 in Norway may support the hypothesis of a gradual change in biological processes that influence preterm birth, rather than any immediate impact of changes in health care delivery. However, the fact that trends for Denmark - which arguably had a similar level of ‘lockdown’ – were much weaker does not support this hypothesis of some gradual change in the incidence of preterm birth after the introduction of stricter COVID-19 mitigation measures.

Clinical and research implications

While there are some well-known risk factors for preterm birth, the biological mechanisms behind preterm birth remain poorly understood.[47] and identifying additional factors that could influence preterm risk is of great interest, as preterm births represent a substantial burden for the children themselves, parents and society. Early reports of a decrease in preterm birth following the onset of the COVID-19 pandemic have therefore ignited much interest,[10] and this is likely in part due to the well-established challenge of further reducing preterm birth incidence in countries with already low rates of preterm birth.[48] Further research could usefully investigate the extent to which the impact of COVID-19 mitigation measures may be mediated by contextual factors such as existing trends in preterm birth and characteristics of health care systems.

Strengths and Limitations

This study used national registry data covering more than 1.5 million births in the three Scandinavian countries from 2014 through 2020. We captured all births in Norway and Denmark in this time period, and 92% of births in Sweden. Around 8% of births were missing due to incomplete electronic data transfer in 3 of Sweden's 21 counties.[17] The missing registrations did not depend on birth outcomes and would not bias associations. By comparing births around March 2020 to those in the same seasonal period in previous years, we were able to account for discernible seasonal and yearly trends in preterm birth. Prospectively and well-established routine collection of data reduces bias from reporting, and our primary outcome (preterm birth) is an objective outcome based on gestational age estimates derived predominantly from ultrasonography.

The COVID-19 pandemic arguably represents the most important natural experiments of our time, and is well suited to the application of quasi-experimental methods. DiD methods are designed to minimise the effect of any unmeasured confounding. Nevertheless, unbiased DiD estimates hinge on the assumption of parallel pre-trends. Visual inspection of plots did not suggest that the parallel trends assumption was violated. The validity of the approach also depends on the 'common shocks' assumption, which can be defined as the assumption that any other event that occurs during or following the intervention should affect each group equally. The common shocks assumption is essentially an untestable assumption involving any exogenous shocks that may be unknown. However, the use of data from three countries, with comparable findings suggest that this is not the cause of our findings.

A strength of our study was that we were able to subdivide preterm birth into those with spontaneous onset and medically indicated. We were also able to assess very preterm birth (<32 weeks) as a standalone outcome. However, the number of country-specific events by week was insufficient to assess any impact on less common preterm birth subtypes, such as extremely preterm birth (<28 completed weeks). We were therefore unable to use our DiD approach to confirm the suggested decreased incidence of extremely preterm birth found in a previous Danish study.[27]

The aim of this study was to assess the indirect consequences of the COVID-19 pandemic on preterm birth, and we therefore did not include information on SARS-CoV-2 infection in pregnancy. There is emerging evidence that SARS-CoV-2 infection is associated with an increased risk of preterm birth.[49, 50] However, given the generally low level of testing among asymptomatic and mild cases, these findings predominantly relate to more severe infections, so it is expected that confounding by indication will bias the estimates towards an association. The impact of any direct effect of SARS-CoV-2 infection on preterm birth in

Scandinavia is likely to be minimal, given the still comparatively low rates of infection in these countries during the study period.

Conclusion

The indirect impacts of the COVID-19 pandemic are far-reaching and still only beginning to be understood. Using robust population-based data from three high-income countries with varying levels of COVID-19 mitigation measures, we found no strong evidence of a decline in preterm birth following the onset of the COVID-19 pandemic in March 2020.

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Table 1. Summary of early COVID-19 mitigation measures in Norway, Sweden and Denmark

	Norway	Sweden	Denmark
Kindergarten/daycare and primary schools closed	March 12	n/a	March 16
High school and universities closed	March 12	March 17 (recommendation)	March 13
Restrictions on gathering	March 12	March 11 (500+) March 27 (50+)	March 11 (100+) March 17 (10+)
Workplace closures	March 10 (recommendation to work from home)	March 16 (recommendation to work from home)	March 13 (Non-essential workers in public sector ordered to stay home, private sector urged to allow home working)
Non-essential business closed	Some closures from March 12		Some closures from March 18, including restaurants/bars
Stay at home recommendations	March 12 Avoid public transport and unnecessary travels, March 19 not allowed to spend night in vacation homes outside home county	March 16 for over 70s March 19 Avoid unnecessary travels	March 11 restrict public transport and unnecessary travels
Restriction on internal movement	March 12	March 19	April 9
Restrictions on international travel	March 13 Recommendations to avoid all international travel, mandatory quarantine when arriving Norway, isolation if symptoms	March 14 Advice against all international travels, isolation and get tested if symptoms after arrival to Sweden	March 11 (flights from high-risk areas cancelled) March 14 (all borders closed)
Cancellation of public events	March 12	March 12	March 13

Table 2. Characteristics of included births 2014-2020, Norway, Sweden and Denmark

	Norway		Sweden		Denmark	
	n	(%)	n	(%)	n	(%)
All births	392,586		713,121		413,814	
Gestational age						
Extremely preterm <28 weeks	1449	(0.4)	2670	(0.4)	1620	(0.4)
Very preterm 28-<32 weeks	2123	(0.5)	3912	(0.5)	2393	(0.6)
Moderate/late preterm 32-<37 weeks	18,256	(4.7)	33,264	(4.7)	19,411	(4.7)
Term 37-<42 weeks	354,821	(90.4)	636,182	(89.2)	381,218	(92.1)
Post-term ≥42 weeks	15,937	(4.1)	36,113	(5.1)	9172	(2.2)
Maternal age						
<20	3710	(0.9)	7266	(1.0)	3296	(0.8)
20-24	41,279	(10.5)	75,668	(10.6)	41,652	(10.1)
25-29	126,280	(32.2)	223,444	(31.3)	138,920	(33.6)
30-34	139,841	(35.6)	246,949	(34.6)	144,304	(34.9)
35-39	66,785	(17.0)	128,099	(18.0)	69,390	(16.8)
≥40	14,690	(3.7)	31,484	(4.4)	16,252	(3.9)
Missing	1	(0.0)	211	(0.0)		
Parity						
0	166,742	(42.5)	306,085	(42.9)	190,650	(46.1)
≥1	225,844	(57.5)	402,892	(56.5)	223,120	(53.9)
Missing			4144	(0.6)	44	(0.0)
Multiple birth						
Yes	6107	(1.6)	10,072	(1.4)	6768	(1.6)
No	386,479	(98.4)	703,049	(98.6)	407,046	(98.4)
Season of conception[a]						
Winter	90,360	(23.0)	186,013	(26.1)	105,919	(25.6)
Spring	92,381	(23.5)	189,348	(26.6)	97,751	(23.6)
Summer	102,690	(26.2)	170,177	(23.9)	100,506	(24.3)
Fall	107,155	(27.3)	167,583	(23.5)	109,638	(26.5)

[a]Winter (December-February); Spring (March-May); Summer (June-August); Fall (September-November)

Figure 1. Incidence of preterm birth by week[a], 2014-2020, Norway, Sweden and Denmark

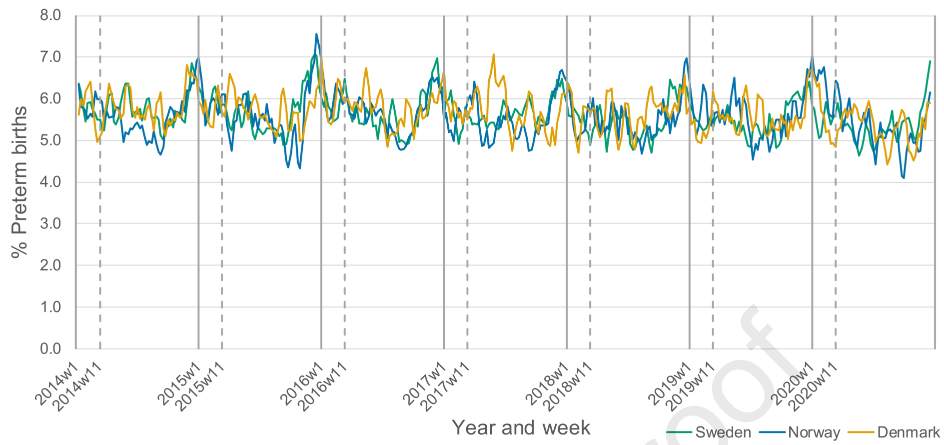
[a]Rolling 3-week average. Dashed vertical lines represent week including March 12

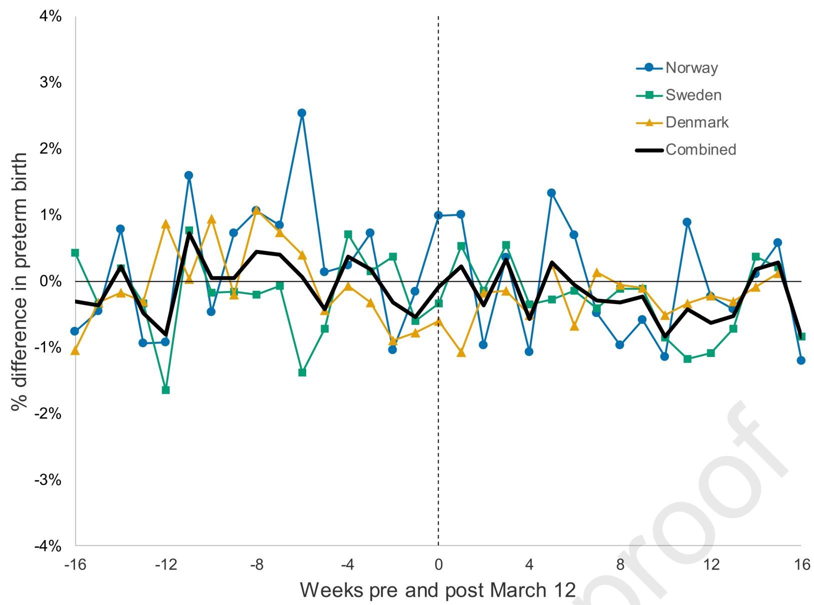
Figure 2. Percent difference in preterm birth in the weeks before and after March 12[a], comparing births in 2020 to births in 2014-2019, Norway, Sweden and Denmark

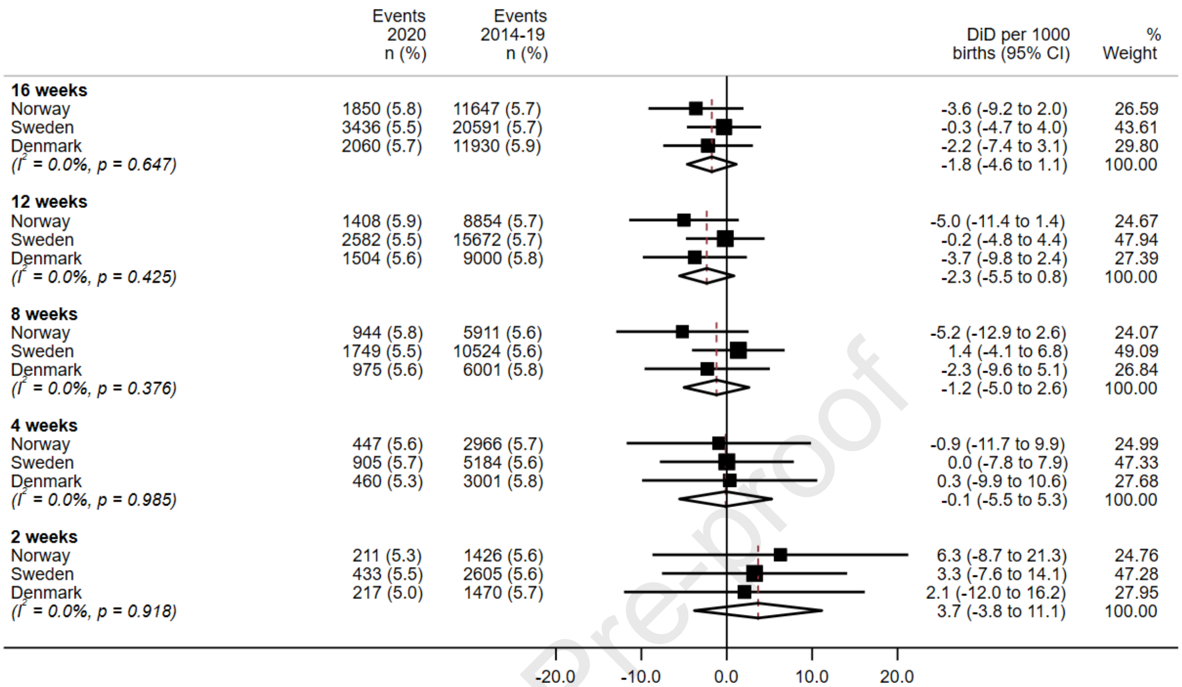
[a]Week beginning March 12 represented by a dashed vertical line

Figure 3. Meta analyses of DiD estimates for preterm birth

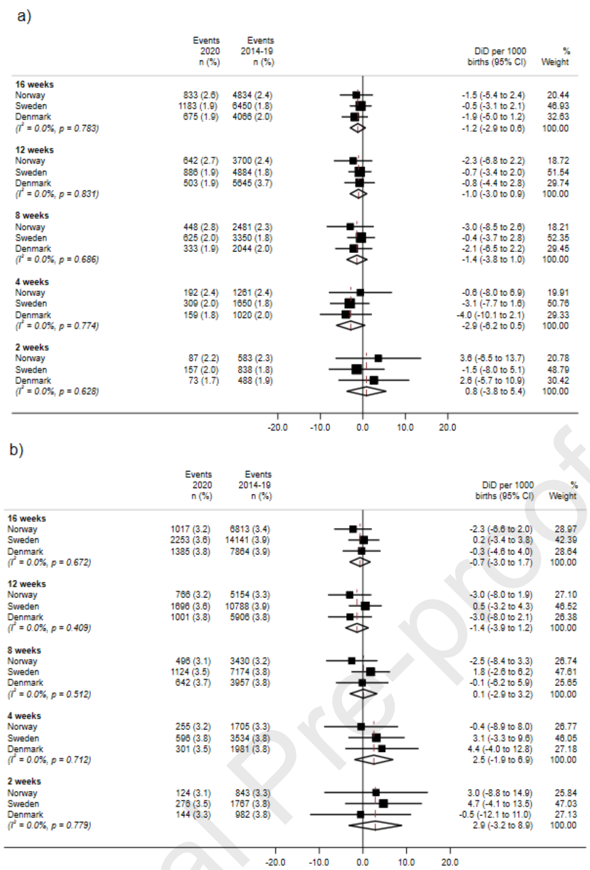
Figure 4. Meta analyses of DiD estimates for a) medically-indicated preterm birth and b) spontaneous preterm birth


8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
% Preterm births
2014w1
2014w11
2015w1
2015w11
2016w1
2016w11
2017w1
2017w11
2018w1
2018w11
2019w1
2019w11
2020w1
2020w11
Year and week
Sweden
Norway
Denmark


4%
3%
2%
1%
0%
-1%
-2%
-3%
-4%
% difference in preterm birth
Norway
Sweden
Denmark
Combined
-16
-12
-8
-4
0
4
8
12
16
Weeks pre and post March 12



Events 2020 n (%)
Events 2014-19 n (%)
DiD per 1000 births (95% CI)
% Weight
16 weeks
Norway 1850 (5.8) 11647 (5.7) -3.6 (-9.2 to 2.0) 26.59
Sweden 3436 (5.5) 20591 (5.7) -0.3 (-4.7 to 4.0) 43.61
Denmark 2060 (5.7) 11930 (5.9) -2.2 (-7.4 to 3.1) 29.80
(I² = 0.0%, p = 0.647) -1.8 (-4.6 to 1.1) 100.00
12 weeks
Norway 1408 (5.9) 8854 (5.7) -5.0 (-11.4 to 1.4) 24.67
Sweden 2582 (5.5) 15672 (5.7) -0.2 (-4.8 to 4.4) 47.94
Denmark 1504 (5.6) 9000 (5.8) -3.7 (-9.8 to 2.4) 27.39
(I² = 0.0%, p = 0.425) -2.3 (-5.5 to 0.8) 100.00
8 weeks
Norway 944 (5.8) 5911 (5.6) -5.2 (-12.9 to 2.6) 24.07
Sweden 1749 (5.5) 10524 (5.6) 1.4 (-4.1 to 6.8) 49.09
Denmark 975 (5.6) 6001 (5.8) -2.3 (-9.6 to 5.1) 26.84
(I² = 0.0%, p = 0.376) -1.2 (-5.0 to 2.6) 100.00
4 weeks
Norway 447 (5.6) 2966 (5.7) -0.9 (-11.7 to 9.9) 24.99
Sweden 905 (5.7) 5184 (5.6) 0.0 (-7.8 to 7.9) 47.33
Denmark 460 (5.3) 3001 (5.8) 0.3 (-9.9 to 10.6) 27.68
(I² = 0.0%, p = 0.985) -0.1 (-5.5 to 5.3) 100.00
2 weeks
Norway 211 (5.3) 1426 (5.6) 6.3 (-8.7 to 21.3) 24.76
Sweden 433 (5.5) 2605 (5.6) 3.3 (-7.6 to 14.1) 47.28
Denmark 217 (5.0) 1470 (5.7) 2.1 (-12.0 to 16.2) 27.95
(I² = 0.0%, p = 0.918) 3.7 (-3.8 to 11.1) 100.00
-20.0 -10.0 0.0 10.0 20.0


a)
Events 2020 n (%)
Events 2014-19 n (%)
DiD per 1000 births (95% CI)
% Weight
16 weeks
Norway 833 (2.6) 4834 (2.4) -1.5 (-5.4 to 2.4) 20.44
Sweden 1183 (1.9) 6450 (1.8) -0.5 (-3.1 to 2.1) 46.93
Denmark 675 (1.9) 4066 (2.0) -1.9 (-5.0 to 1.2) 32.63
(I² = 0.0%, p = 0.783) -1.2 (-2.9 to 0.6) 100.00
12 weeks
Norway 642 (2.7) 3700 (2.4) -2.3 (-6.8 to 2.2) 18.72
Sweden 886 (1.9) 4884 (1.8) -0.7 (-3.4 to 2.0) 51.54
Denmark 503 (1.9) 5645 (3.7) -0.8 (-4.4 to 2.8) 29.74
(I² = 0.0%, p = 0.831) -1.0 (-3.0 to 0.9) 100.00
8 weeks
Norway 448 (2.8) 2481 (2.3) -3.0 (-8.5 to 2.6) 18.21
Sweden 625 (2.0) 3350 (1.8) -0.4 (-3.7 to 2.8) 52.35
Denmark 333 (1.9) 2044 (2.0) -2.1 (-6.5 to 2.2) 29.45
(I² = 0.0%, p = 0.686) -1.4 (-3.8 to 1.0) 100.00
4 weeks
Norway 192 (2.4) 1261 (2.4) -0.6 (-8.0 to 6.9) 19.91
Sweden 309 (2.0) 1650 (1.8) -3.1 (-7.7 to 1.6) 50.76
Denmark 159 (1.8) 1020 (2.0) -4.0 (-10.1 to 2.1) 29.33
(I² = 0.0%, p = 0.774) -2.9 (-6.2 to 0.5) 100.00
2 weeks
Norway 87 (2.2) 583 (2.3) 3.6 (-6.5 to 13.7) 20.78
Sweden 157 (2.0) 838 (1.8) -1.5 (-8.0 to 5.1) 48.79
Denmark 73 (1.7) 488 (1.9) 2.6 (-5.7 to 10.9) 30.42
(I² = 0.0%, p = 0.628) 0.8 (-3.8 to 5.4) 100.00
-20.0 -10.0 0.0 10.0 20.0
b)
Events 2020 n (%)
Events 2014-19 n (%)
DiD per 1000 births (95% CI)
% Weight
16 weeks
Norway 1017 (3.2) 6813 (3.4) -2.3 (-6.6 to 2.0) 28.97
Sweden 2253 (3.6) 14141 (3.9) 0.2 (-3.4 to 3.8) 42.39
Denmark 1385 (3.8) 7864 (3.9) -0.3 (-4.6 to 4.0) 28.64
(I² = 0.0%, p = 0.672) -0.7 (-3.0 to 1.7) 100.00
12 weeks
Norway 766 (3.2) 5154 (3.3) -3.0 (-8.0 to 1.9) 27.10
Sweden 1696 (3.6) 10788 (3.9) 0.5 (-3.2 to 4.3) 46.52
Denmark 1001 (3.8) 5906 (3.8) -3.0 (-8.0 to 2.1) 26.38
(I² = 0.0%, p = 0.409) -1.4 (-3.9 to 1.2) 100.00
8 weeks
Norway 496 (3.1) 3430 (3.2) -2.5 (-8.4 to 3.3) 26.74
Sweden 1124 (3.5) 7174 (3.8) 1.8 (-2.6 to 6.2) 47.61
Denmark 642 (3.7) 3957 (3.8) -0.1 (-6.2 to 5.9) 25.65
(I² = 0.0%, p = 0.512) 0.1 (-2.9 to 3.2) 100.00
4 weeks
Norway 255 (3.2) 1705 (3.3) -0.4 (-8.9 to 8.0) 26.77
Sweden 596 (3.8) 3534 (3.8) 3.1 (-3.3 to 9.6) 46.05
Denmark 301 (3.5) 1981 (3.8) 4.4 (-4.0 to 12.8) 27.18
(I² = 0.0%, p = 0.712) 2.5 (-1.9 to 6.9) 100.00
2 weeks
Norway 124 (3.1) 843 (3.3) 3.0 (-8.8 to 14.9) 25.84
Sweden 276 (3.5) 1767 (3.8) 4.7 (-4.1 to 13.5) 47.03
Denmark 144 (3.3) 982 (3.8) -0.5 (-12.1 to 11.0) 27.13
(I² = 0.0%, p = 0.779) 2.9 (-3.2 to 8.9) 100.00
-20.0 -10.0 0.0 10.0 20.0