

RISK FACTORS FOR PREMATURE BIRTH IN AUSTRIA FROM 2008-2012 - ANALYSIS OF THE AUSTRIAN NATIONAL BIRTH REGISTRY

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Objective

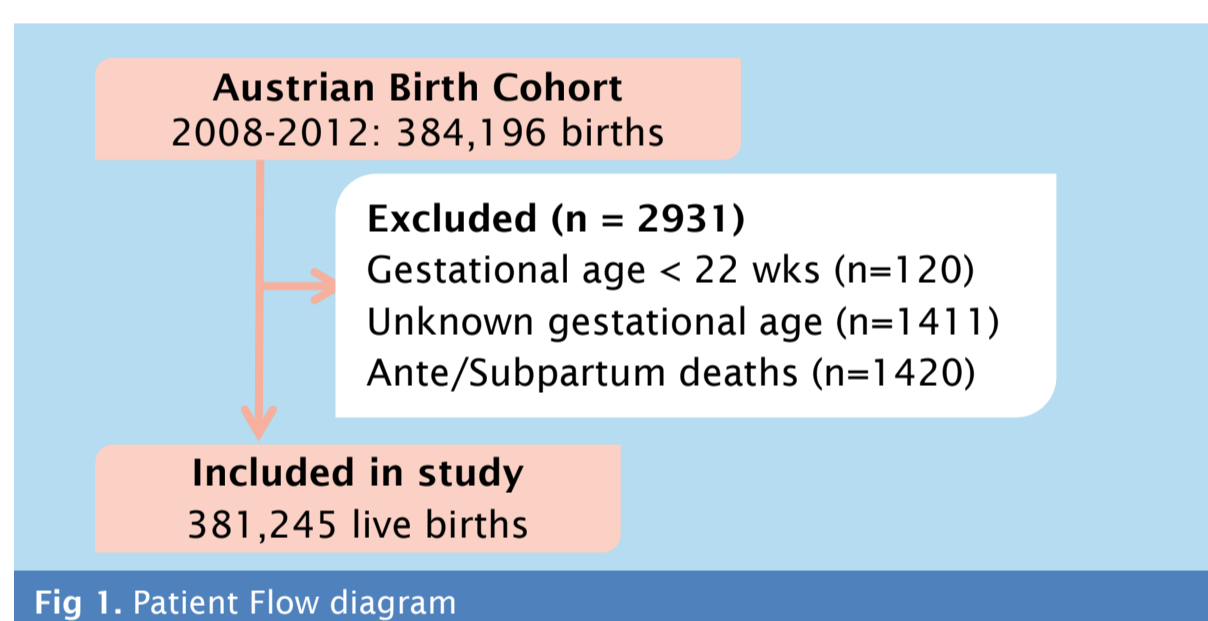
To determine the risk factors associated with preterm birth in the Austrian Birth Cohort

Patients and Methods

Design: Cohort Study

Participants: 381,245 live births in Austrian hospitals from 2008-2012 documented by the Austrian Birth Cohort accounting for 98.5% of all live births in Austria

Main outcome measure: Preterm birth was defined as born in less than 37 weeks gestational age. The authors estimated odds ratios by logistic regression for available risk factors. Two models for adjustment were used: Model1 only used variables with less missing values (290,136 births), Model2 used all variables for a full adjusted model, but included less births (n = 152,021). All analysis were done with Stata® v13.1, USA.



Results

8.63% of births were born preterm. In the observed period a yearly decreased risk of preterm birth by 2% was found [odds ratio (aOR) 0.98 95% CI 0.97 to 0.99] although overall numbers of preterms remained relatively stable in the observed period. Moderate preterms comprised the biggest group throughout (Fig 2).

Risk factors associated with preterm birth after adjustment by Model1 in the cohort were: male sex of offspring (aOR 1.12 95% CI 1.09 to 1.15), maternal age > 35 years (aOR 1.30 95% CI 1.25 to 1.35), underweight (aOR 1.32 95% CI 1.25 to 1.40), multiparous (aOR 0.68 95% CI 0.66 to 0.72) and multiple pregnancy (aOR 23.85 95% CI 22.78 to 24.97), primary cesarean section (aOR 1.56 95% CI 1.50 to 1.63), maternal smoking (1-9 cigarettes: aOR 1.33 95% CI 1.25 to 1.41; 10 or more cigarettes: 1.60 95% CI 1.50 to 1.71), lack of antenatal care (aOR 1.50 95% CI 1.30 to 1.72). Foreign mothers had higher rates of prematurity (aOR 1.29 95% CI 1.05 to 1.57). Other factors such as birth without a partner, federal state or population density of region did not show consistent associations (Table 1).

Associations in the fully adjusted model (model2) showed mainly similar results.

References

Blencowe H et al. National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries. *Lancet*.;379(9832):2162-72.

Klimont J. Frühgeburten in Österreich - zeitliche Trends und Risikofaktoren auf Basis revidierter Ergebnisse. *Stat Nachrichten* 2012;(9):660-8.

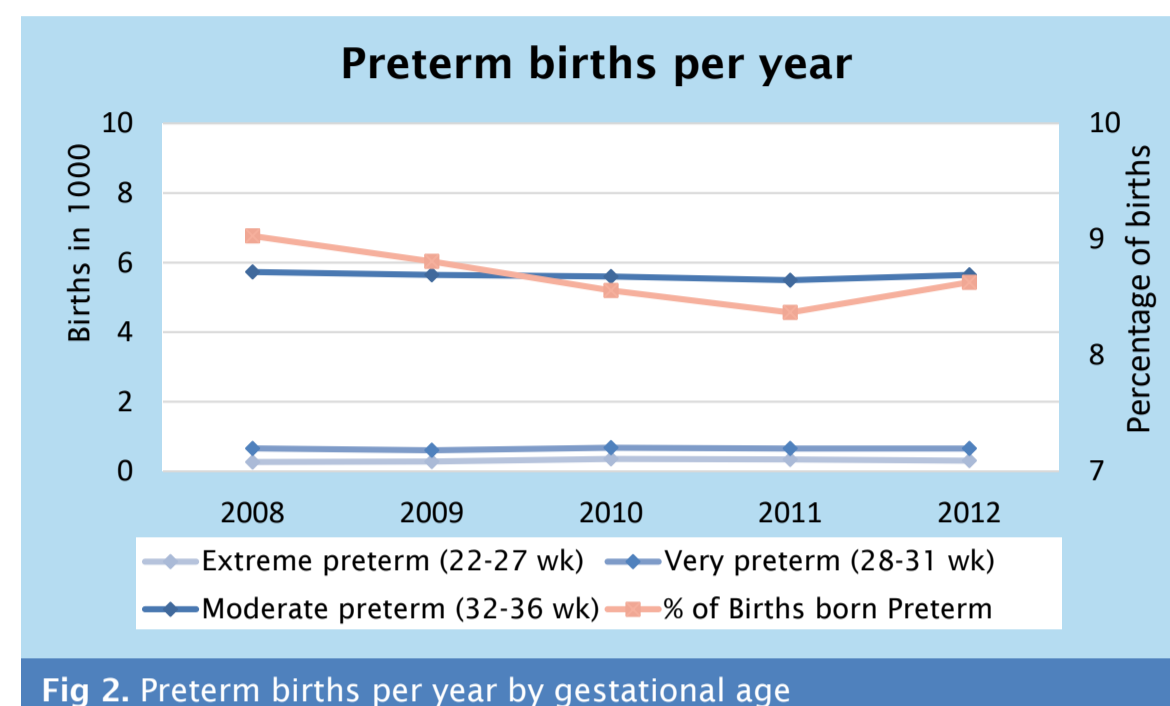


Fig 2. Preterm births per year by gestational age

		Unadjusted OR (95% CI)	AdjustedOR (95% CI) (model1)	AdjustedOR (95% CI) (model2)
Birth year	Per year	0.98 (0.97 – 0.99)	0.98 (0.97 – 0.99)	0.98 (0.96 – 0.99)
Sex	Male vs Female	1.12 (1.09 – 1.15)	1.16 (1.13 – 1.20)	1.20 (1.15 – 1.25)
Maternal age	<20 vs 20-34	0.99 (0.91 – 1.07)	1.02 (0.93 – 1.12)	0.93 (0.81 – 1.06)
	>= 35 vs 20-34	1.32 (1.29 – 1.35)	1.30 (1.25 – 1.35)	1.27 (1.21 – 1.34)
Pre-pregnancy BMI	Underweight vs Norm	1.20 (1.14 – 1.26)	1.32 (1.25 – 1.40)	1.30 (1.20 – 1.40)
	Overweight vs Norm	0.99 (0.96 – 1.03)	0.99 (0.95 – 1.03)	0.97 (0.91 – 1.02)
	Obese (>30) vs Norm	1.06 (1.01 – 1.12)	1.07 (1.00 – 1.13)	1.03 (0.94 – 1.12)
Parity	>1 vs 1	0.70 (0.69 – 0.72)	0.68 (0.66 – 0.70)	0.67 (0.64 – 0.70)
Multiples	Multiple vs Singleton	27.40 (26.38 – 28.47)	23.85 (22.78 – 24.97)	23.45 (21.81 – 25.22)
Birth mode	Caesarean vs Other	2.59 (2.53 – 2.66)	1.56 (1.50 – 1.63)	1.36 (1.28 – 1.45)
Maternal smoking	None vs 1-9	1.34 (1.27 – 1.40)	1.33 (1.25 – 1.41)	1.32 (1.23 – 1.41)
	None vs >9	1.48 (1.40 – 1.56)	1.60 (1.50 – 1.71)	1.58 (1.46 – 1.71)
Single mom	No vs Yes	0.97 (0.93 – 1.01)	1.07 (1.02 – 1.13)	1.02 (0.96 – 1.09)
Antenatal Care	None vs Any	1.57 (1.42 – 1.74)	1.50 (1.30 – 1.72)	1.72 (1.48 – 2.00)
Federal State	Burgenland	1	1	1
	Carinthia	1.04 (0.96 – 1.13)	1.09 (0.98 – 1.19)	1.24 (1.08 – 1.42)
	Lower Austria	1.01 (0.94 – 1.08)	1.02 (0.93 – 1.11)	1.15 (1.01 – 1.32)
	Upper Austria	0.90 (0.84 – 0.97)	0.91 (0.84 – 0.99)	1.07 (0.94 – 1.23)
	Salzburg	0.95 (0.88 – 1.03)	1.10 (1.00 – 1.22)	1.20 (1.04 – 1.39)
	Styria	1.09 (1.01 – 1.17)	1.13 (1.04 – 1.24)	1.40 (1.22 – 1.61)
	Tyrol	0.93 (0.86 – 1.00)	0.99 (0.91 – 1.09)	1.24 (1.09 – 1.42)
	Vorarlberg	1.01 (0.93 – 1.10)	0.90 (0.80 – 1.00)	0.87 (0.72 – 1.05)
	Vienna	0.94 (0.87 – 1.00)	1.01 (0.90 – 1.13)	1.37 (1.10 – 1.72)
	Foreign	1.27 (1.08 – 1.47)	1.29 (1.05 – 1.57)	1.80 (1.30 – 2.50)
Population density	High density	1	1	1
	Intermediate density	1.04 (1.01 – 1.08)	1.04 (0.96 – 1.12)	1.34 (1.11 – 1.61)
	Thinly-populated area	1.03 (1.00 – 1.06)	1.05 (0.98 – 1.13)	1.33 (1.11 – 1.60)

Table 1. Unadjusted and Adjusted OR for risk factors

Conclusion

Risk factors commonly associated with preterm birth were present in the Austrian population. Premature birth rate remains high in Austria compared to other European countries, even though rates decreased in the observed period.