

Stillbirth at term: a regional prospective case-control study over the 8-year period

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Objective. Intensified efforts to identify the risk factors for stillbirth (SB) are needed to reduce its rate. The aim of the study is to assess the risk factors for SB in late pregnancy.

Materials and Methods. This is a prospective case-control study conducted in Emilia-Romagna (Italy) on pregnant women at ≥ 37 weeks referred to the Obstetric Units from 2014 to 2021. The case group consisted of all cases of SB; the live births in the same period were included in the control group. We compared the information about risk factors for SB and conducted a descriptive analysis about the cause of SB according to the modified Re.CoDe. classification.

Results. From 2014 to 2021, the SB rate in Emilia-Romagna was 3.27 per 1000 births. The risk factors significantly associated with SB at term were maternal foreign origin, high education level, overweight, a previous SB, and low neonatal weight. There was no association between the two groups regarding the other risk factors analysed (Table 1). 26.1% of SB remained unclassified. The more frequent causes of death were placental (23.7%) and umbilical cord pathology (22.2%). Infections, foetal and maternal pathology were responsible for a smaller number of cases (9.3%, 8.9% and 3.5% respectively). The main causes in the last two categories were IUGR and diabetes (12 and 8 cases respectively).

Conclusions. Our study confirms what has already been described in literature. The detection rate of late IUGR and the management of pregnancy with diabetes, overweight and a previous SB need to be improved to prevent SB at term.

Table 1.

Risk factors for stillbirth	Stillbirths		Live births		RR	95% CI	p value
	N [†]	%	N [†]	%			
Maternal age (years)							
<33	162	63,0%	161668	63,7%			Reference
≥ 33	94	36,6%	84237	34,2%	1.07	0.91-1.26	0.4076
Missing	1	0,4%	232	0,1%			
Education (years)							
≤ 8	32	20,2%	83637	34,0%			Reference
>8	174	67,7%	162320	66,0%	1.17	1.09-1.25	0,0005
Missing	237	100,0%	246177	100,0%			
Country of origin							
Italy	136	52,9%	156443	63,5%			Reference
Others	121	47,1%	88801	36,1%	1.30	1.14-1.48	0,0003
Missing	0	0,0%	933	0,4%			
Smoking habit							
No	210	81,7%	204784	83,2%			Reference
Yes	36	14,0%	36301	14,8%	0.97	0.72-1.31	0,8290
Missing	11	4,3%	4892	2,0%			
Parity							
0	123	47,9%	122832	49,9%			Reference
≥ 1	133	51,8%	123345	50,1%	1.04	0.92-1.17	0,5543
Missing	1	0,4%	0	0%			
Previous SB							
No	123	94,0%	123345	98,5%			Reference
Yes	8	6,0%	1822	1,5%	4.13	2.11-8.10	<0,0001
Type of pregnancy							
Single	230	97,3%	242344	98,5%			
Multiple	5	1,9%	3633	1,5%	1.33	0.56-3.17	0,5210
Missing	2	0,8%	0	0%			
In vitro fertilization pregnancy							
No	231	97,7%	237015	96,3%			Reference
Yes	6	2,3%	6263	2,5%	0.91	0.41-2.00	0,8083
Missing	0	0,0%	2899	1,2%			
Pre-pregnancy BMI							
<25	133	60,3%	172479	70,1%			Reference
≥ 25	82	31,9%	69462	28,2%	1.21	1.01-1.44	0,0452
Missing	20	7,8%	4236	1,7%			
Gestational weight gain (IOM rec.)							
Adequate	78	33,0%	93212	44,3%			Reference
Inadequate	113	51,6%	112933	53,6%	1.09	0.97-1.22	0,1807
Missing	30	13,3%	4430	2,1%			
Birthweight centile (INaS Chart)							
SGA	48	18,7%	21103	8,6%	2.14	1.66-2.57	<0,0001
AGA	187	72,8%	199301	81,0%			Reference
LGA	13	5,8%	23367	10,4%	0.65	0.40-1.06	0,0782
Missing	7	2,7%	4	0%			