



Trend and factors associated with adverse birth weight in Uruguayan children between 2009 and 2015

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Abstract

Statement of the Problem: The size of the newborn determines the health and development in the first months of life, for this reason it is considered as a variable of importance and permanent study as a marker of the health status in countries. The purpose of this study is to identify the trend and maternal factors associated with adverse birth weight.

Methods: Cross-sectional design. The analysis uses the 2009-2015 Uruguay's data on 303,625 newborns.

Results: The prevalence of macrosomia (> 3,999g) has increased from 7.0% to 8.4%. The prevalence of low birth weight (LBW) (< 2,500g) decreased, standing at 6.6%. The factors that determine more possibilities of LBW were maternal pathologies: preeclampsia (OR = 4.80; CI95%= 4.57- 5.05), previous hypertension (OR = 2.11; CI95%= 1.96-2.27), hypertensive disease of pregnancy (OR = 1.82; CI95%= 1.74-1.90). Inadequate controls (OR = 2.29; CI95%= 2.20-2.39), low pre-maternal maternal weight (OR = 1.65; CI95%= 1.58-1.74), maternal smoking (OR = 1.36; CI95% = 1.32-1.40) and shorter duration of pregnancy (OR = 2.52; CI95%= 2.50-2.55). The results also showed interactions: association between LBW and hypertensive pregnancy disease varies between gestation weeks (OR = 1.07; CI95% = 1.03-1.11), the relationship with preeclampsia varies according to weeks of gestation (OR = 1.05; CI95% = 1.01-1.11) and the number of controls (OR = 1.04; CI95% = 1.01-1.06). Macrosomia was associated with type 1 diabetes (OR = 2.21; CI95%= 1.86-2.61), Type 2 or Gestational (OR = 1.78; CI95%= 1.70-1.87), obesity maternal (OR = 2.33; CI95%= 2.24-2.43) and longer gestation duration (OR = 2.62; CI95%= 2.53-2.72).

Conclusions: LBW decreases while macrosomia increases. The health and nutritional status of women at the beginning of pregnancy, pathologies of the last trimester, smoking, shorter duration of pregnancy and inadequate controls are associated with LBW. Overweight, obesity and metabolic diseases determine macrosomia.

Biography

Isabel pereyra gonzalez is an associate professor in the department of nutrition at the Universidad Católica del Uruguay. She earned her PhD in public health from Universidad de Chile. Her doctoral work focused in understanding how birth weight as well as how growth during the first year of life are associated with early stages of diabetes mellitus in young adults. She holds a master in nutrition and public health from Universidad Católica del Uruguay and a degree in nutrition and dietetics from Universidad de la República, Uruguay. She obtained a fellowship by the low scholar program in cardiovascular health Program at the Harvard T.H. Chan School of public health. She has been involved in projects regarding childhood health with various organizations including UNICEF, UNDP, and the Uruguay ministries of public health and social development. Her other research activities have also focused on women's nutrition, pregnancy care and non-communicable diseases.



Publications

1. Low Birth Weight. In World Health Organization
2. Early Life Nutrition and Non Communicable Disease. In R. Kelishadi (Ed.), Primordial Prevention of Non Communicable Disease
3. Developmental Origins of Health and Disease – from a small body size at birth to epigenetics
4. Macrosomia in 23 developing countries: An analysis of a multicountry, facility-based, cross-sectional survey
5. Associations between birth weight, obesity, fat mass and lean mass in Korean adolescents: The Fifth Korea National Health and Nutrition Examination Survey

Association between maternal characteristics and those of newborns with low birth weight in the period 2009-2015 in Uruguay (n=281.853).

	OR crude	CI95%	OR adjusted ^a	CI95%	OR adjusted ^b	CI95%
Mothers characteristics						
Tobacco use	1.41	1.36-1.46	1.36	1.32-1.40	1.36	1.32-1.40
Hypertensive disease of pregnancy (HDP)	2.16	2.05-2.28	1.82	1.74-1.90	1.82	1.75-1.90
Preeclampsia	5.13	4.87-5.40	4.80	4.57-5.05	4.80	4.57-5.03
HTA previa	2.25	2.06-2.46	2.11	1.96-2.27	2.11	1.96-2.26
Bacteriuria	1.08	1.03-1.14	1.00	0.96-1.04	1.00	0.97-1.05
Inadequate controls	2.52	2.42-2.62	2.29	2.20-2.39	2.28	2.19-2.37
Pregnancy consultations (n°) ^c	1.30	1.29-1.31	1.28	1.28-1.29	1.28	1.28-1.30
Low pre-pregnancy maternal weight	1.63	1.55-1.71	1.65	1.58-1.74	1.65	1.57-1.73
Newborns characteristics						
Gestation (weeks) ^c	2.44	2.42-2.50	2.52	2.50-2.55	2.50	2.50-2.56
Female	1.14	1.10-1.16	1.19	1.16-1.22	1.19	1.16-1.22
Variable interaction						
HDP * pregnancy consultations (n°) ^c	1.02	1.00-1.03	1.01	1.00-1.03	1.01	0.99-1.03
HDP * gestation (weeks) ^c	1.07	1.03-1.12	1.07	1.03-1.11	1.07	1.03-1.10
Preeclampsia * pregnancy consultations (n°) ^c	1.03	1.01-1.05	1.04	1.01-1.06	1.04	1.01-1.06
Preeclampsia * gestation (weeks) ^c	1.04	1.01-1.11	1.05	1.01-1.11	1.04	1.01-1.11

OR= odds ratio; HDP= hypertensive disease of pregnancy; HTA= arterial hypertension;
^aAdjustment for age and maternal education; ^bAdjustment for age, maternal education and year of birth; ^cConverted to 1 / OR for better presentation.

Referencia: Births weighing between 2,500g and 4,000g.
 Newborns weighing more than 4,000g were excluded from this analysis.

Association between maternal characteristics and those of newborns with macrosomia in the period 2009-2015 in Uruguay (n=282.842).

	OR crude	CI95%	OR adjusted ^a	CI95%	OR adjusted ^b	CI95%
Mothers characteristics						
DM I	2.37	2.00-2.81	2.21	1.86-2.61	2.20	1.86-2.62
DMII and DG	1.90	1.82-2.00	1.78	1.70-1.87	1.78	1.70-1.87
Overweight pregestational	1.71	1.69-1.81	1.72	1.66-1.78	1.71	1.66-1.77
Obesidad pregestacional	2.39	2.30-2.48	2.33	2.24-2.43	2.32	2.23-2.42
Hypertensive disease of pregnancy (HDP)	1.12	1.06-1.17	1.08	1.03-1.14	1.08	1.03-1.14
HTA previa	1.03	0.93-1.13	0.94	0.85-1.03	0.94	0.85-1.03
Maternal height (cm)	1.05	1.05-1.06	1.05	1.04-1.05	1.05	1.04-1.05
Gestation greater than 40 weeks	2.54	2.45-2.63	2.62	2.53-2.72	2.62	2.53-2.72
Primigravida	1.10	1.01-1.19	1.08	1.00-1.17	1.10	1.00-1.19
Newborn characteristics						
Male	1.74	1.69-1.79	1.76	1.71-1.81	1.76	1.71-1.81
Variable interaction						
DMI * pregnancy consultations (n°) ^c	1.10	1.03-1.16	1.10	1.03-1.16	1.09	1.03-1.16
DMII and DG * pregnancy consultations (n°) ^c	1.11	1.09-1.12	1.11	1.09-1.12	1.11	1.08-1.12
HDP * pregnancy consultations (n°) ^c	1.05	1.03-1.07	1.04	1.03-1.07	1.05	1.02-1.07

OR= odds ratio; HDP= hypertensive disease of pregnancy; HTA= arterial hypertension; DMI= diabetes mellitus 1; DMII= diabetes mellitus 2; DG= diabetes gestacional; ^a Adjustment for age and maternal education; ^b Adjustment for age, maternal education and year of birth.

Referencia: Births weighing between 2,500g and 4,000g.
 Newborns weighing less than 2,500g were excluded from this analysis.