28-30 SETTEMBRE 2022
BARI | VILLA ROMANAZZI CARDUCCI
6° Forum Mediterraneo 2022 in Sanità®

Differenze di genere (o di sesso) in epoca neonatale

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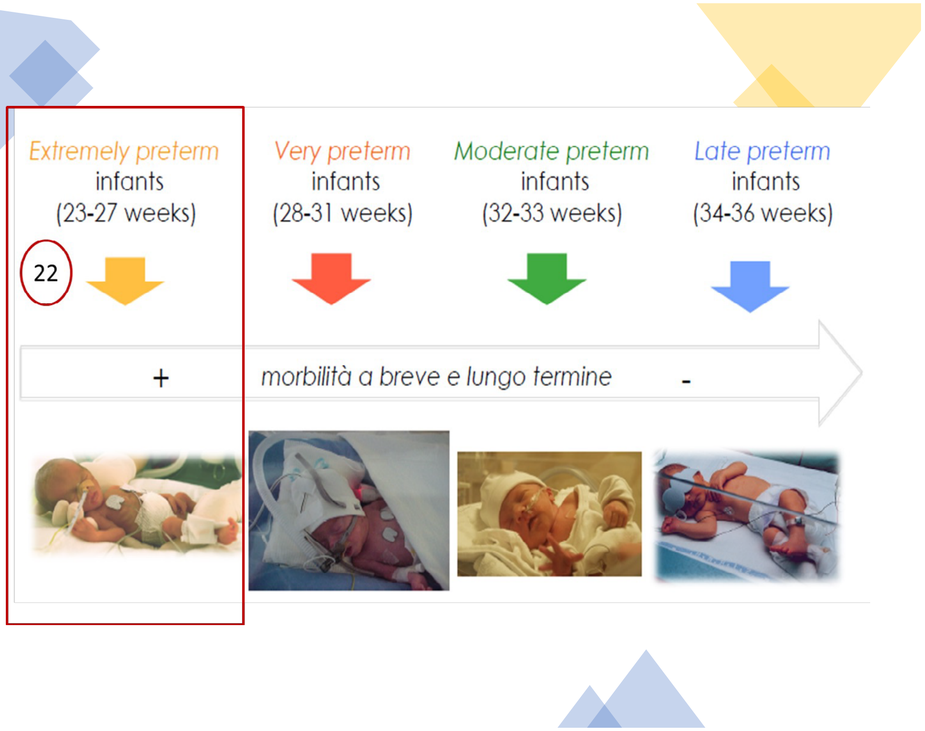
@ForumRisk www.forummediterraneosanita.it



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Il concetto di Medicina di Genere
in Neonatologia ha compiuto 40 anni!

«Hypothesis of the male disadvantage»

Maggiore mortalità perinatale
nei maschi rispetto alle femmine

Hypoxia, influence of sex hormones, alterations in cell death pathways
and sensitivity to inflammation, autonomic and endocrine stress responses
seem to play a relevant role in this biologic difference between males and females

Naeye RL. Pediatrics. 1971; 48: 902-6

National Vital Statistics Reports
NVSS
Volume 64, Number 9
August 6, 2015

Infant Mortality Statistics From the 2013 Period Linked Birth/Infant Death Data Set

by T.J. Mathews, M.S.; Marian F. MacDorman, Ph.D.; and Marie E. Thoma, Ph.D., Division of Vital Statistics

In the United States in 2013, the overall **infant mortality rate** for **male** infants was 6.51 per 1,000 births
21% higher than the rate for **female** infants (5.39)

Table 1. Infant mortality rates, live births, and infant deaths, by selected characteristics and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: United States, 2013 linked file

Characteristic	All origins[1]	Non-Hispanic				Hispanic				
		White	Black	American Indian or Alaska Native[2]	Asian or Pacific Islander	Total	Mexican	Puerto Rican	Cuban	Central and South American
	Infant mortality rates per 1,000 live births in specified group									
Total	5.96	5.06	11.11	7.61	4.07	5.00	4.90	5.93	3.02	4.30
Age at death (days)										
Total neonatal	4.04	3.34	7.46	4.11	2.99	3.55	3.51	4.23	2.28	3.12
Early neonatal (under 7)	3.28	2.68	6.11	3.11	2.49	2.88	2.87	3.56	1.86	2.43
Late neonatal (7–27)	0.76	0.66	1.35	1.00	0.50	0.67	0.63	0.67	*	0.69
Postneonatal	1.92	1.71	3.65	3.50	1.08	1.45	1.40	1.68	*	1.18
Sex										
Male	6.51	5.63	11.97	8.34	4.49	5.36	5.16	6.15	3.29	4.89
Female	5.39	4.46	10.23	6.88	3.63	4.62	4.63	5.67	2.74	3.70

Gender Differences in Infant Mortality and Neonatal Morbidity in Mixed-Gender Twins

SCIENTIFIC REPORTS

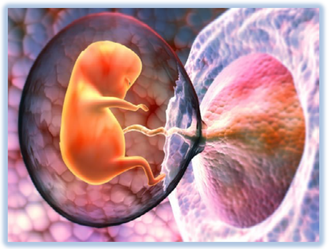
Published online: 18 August 2017

Outcomes	The male twins (n, %)	The female twins (n, %)	OR (95%CI)	aOR (95%CI)
Fetal mortality	1134 (1.05)	1126 (1.04)	1.01 (0.91, 1.13)	NA
Congenital abnormality	1867 (1.75)	1507 (1.41)	1.38 (1.27, 1.50)	NA
Infant mortality	2675 (2.52)	2412 (2.27)	1.30 (1.19, 1.42)	1.43 (1.27, 1.61)
Neonatal mortality	*2152 (2.03)*	*1964 (1.85)*	*1.35(1.21, 1.51)*	*1.59 (1.37, 1.85)*
Infant mortality after 28 days	*523 (0.49)*	*448 (0.42)*	*1.17 (1.03, 1.34)*	*1.18 (1.00, 1.40)*
Low 5-minute Apgar score (<7)	3612 (3.40)	3428 (3.22)	1.09 (1.00, 1.19)	1.15 (1.05, 1.26)
Assistant ventilation >30 minutes	4318 (4.06)	3897 (3.67)	1.42 (1.31, 1.54)	1.31 (1.17, 1.47)
Respiratory distress syndrome	3046 (5.30)	2721 (4.73)	1.52 (1.33, 1.72)	1.45 (1.26, 1.66)

Table 3. Mortality and Morbidity in Mixed-Gender Twins: Comparison Between Male and Female Co-twins.
OR: Odds Ratio; aOR: Odds Ratio adjusted by birth weight, birth order and methods of delivery.

La valutazione dei gemelli elimina potenziali effetti confondenti di fattori iatrogeni, genetici e familiari sulle variabili studiate

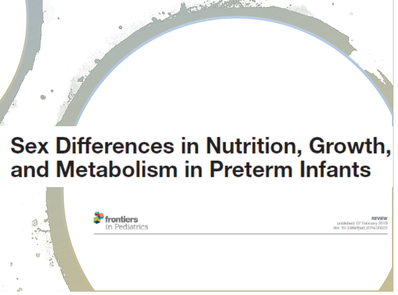
SESSO FETALE E PLACENTA



- Le placente di feti maschi e femmine differiscono per contenuto di proteine soprattutto in risposta a condizioni patologiche

- **I maschi rispondono con variazioni minime nelle proteine placentari,** il che li mette a rischio di IUGR, prematurità e morte se si verifica un evento avverso acuto

- **Le femmine al contrario esprimono con maggiore variabilità nelle proteine placentari** ciò causa una minore riduzione della crescita e le mette in grado di sopportare ulteriori eventi avversi caratterizzati da ridotto apporto di nutrienti e O_2



SESSO FETALE E CRESCITA

- funzione placentare influenza la crescita sessospecifica o al contrario sesso fetale determina la funzione placentare?
- **glucocorticoidi materni** fondamentali nella crescita fetale e nella maturazione degli organi
- **crescita maggiore feti maschi**
- eccesso di glucorticoidi riduce lunghezza capillari placentari solo nei feti maschi
- **trasportatori placentari del calcio** critici per sviluppo fetale evidenziati maggiormente nei feti maschi

TABLE 1 | Summary of sex-specific differences in growth and metabolism.

	Male	Female
GROWTH-1ST TRIMESTER		
Crown-rump length	Larger	Smaller
GROWTH-2ND TRIMESTER		
Biparietal diameter	Larger	Smaller
Abdominal circumference	Larger	Smaller
GROWTH-3RD TRIMESTER		
Fat mass	9.9% at birth	11% at birth
Lean body mass	Higher	Lower
MATERNAL MORBIDITY		
Mild Pre-eclampsia	Normal growthrate	Reduced growthrate
Maternal obesity	Higher risk of obesity at 1year	No definite effect
Gestational diabetes	High risk of beingoverweight at 5–7 years	No known risk of beingoverweight
OTHER FACTORS		
Placental gene expressions	Minimal gene and protein changes	Multiple gene and protein changes
Same sex twin pairs	High risk for RDS and low risk for IUGR	High risk for IUGR
IGF-1& IGFBP-3 levels	Lower	Higher

frontiers in Pediatrics

Sex Differences in Nutrition, Growth, and Metabolism in Preterm Infants

REVIEW
published: 07 February 2019
doi: 10.3389/fped.2019.00022

Influence of Sex on Gestational Complications, Fetal-to-Neonatal Transition, and Postnatal Adaptation

frontiers in Pediatrics
REVIEW
published: 23 April 2018
doi: 10.3389/fped.2018.00063

SESSO FETALE E IPERTENSIONE GESTAZIONALE MATERNA

Demographics	Nulliparous (N (%))	Maternal age (years)	BMI	GA at enrollment (weeks)	GA at delivery (weeks)	FBW at delivery (grams)	Fetal gender (N)	
							Male	Female
Hypertensive pregnancy (N = 98)							35	63
SPE (N = 34)	20 (59%)	32.9 ± 4.4	22.8 ± 4.0	17.3 ± 1.3	36.0 ± 3.7	2273 ± 910	10	24
MPE (N = 29)	16 (55%)	30.6 ± 4.0	24.1 ± 3.0	16.9 ± 0.7	38.9 ± 1.1	3332 ± 447	12	17
GH (N = 35)	25 (71%)	30.9 ± 4.4	21.9 ± 3.1	17.1 ± 0.9	38.7 ± 1.3	3091 ± 517	13	22
Normotensive pregnancy (N = 196)	123 (63%)	31.5 ± 7.5	22.1 ± 3.2	17.1 ± 1.2	39.0 ± 1.5	3014 ± 655	102	94
p	0.561*	0.544**	0.072**	0.606**	<0.01**	<0.01**	0.008#	

SPE, severe preeclampsia; MPE, mild preeclampsia; GH, gestational hypertension; BMI, body mass index; GA, gestational age; FBW, fetal birth weight.
* Chi-square test.
** ANOVA.
# Hypertensive pregnancy vs. normotensive.

SESSO FETALE E COMPLICANZE PERIPARTO

Influence of Sex on Gestational Complications, Fetal-to-Neonatal Transition, and Postnatal Adaptation

TABLE 1 | Odds ratio (OR) for males regarding gestational conditions that alter fetal progression in labor after Sheiner et al. (11).

Condition	OR	Significance
Macrosomia	2.0 (1.8–2.1)	<0.001
Failure to progress labor	1.2 (1.1–1.3)	<0.001
Cord prolapse	1.3 (1.1–1.6)	<0.014
Nuchal cord	1.2 (1.1–1.2)	<0.001
True umbilical cord knot	1.5 (1.3–1.7)	<0.001
C-section	1.2 (1.2–1.3)	<0.001
5 min Apgar score	1.5 (1.3–1.8)	<0.001

The impact of fetal gender and ethnicity on the risk of spontaneous preterm delivery in women with symptoms of preterm labor

J Matern Fetal Neonatal Med, 2016; 29(21): 3563–3569

SESSO E PREMATURITÀ

Table 2. Median gestational age at delivery, male versus female.

GA at study enrollment (weeks)	Percentage male at study enrollment	Median GA at delivery, weeks (IQR)		
		Male	Female	*p* values
24–25 6/7	55%	38 0/7 (36 2/7–39 3/7)	37 5/7 (29 3/7–39 0/7)	0.31
26–27 6/7	48%	37 4/7 (30 5/7–39 0/7)	38 1/7 (35 4/7–39 4/7)	0.11
28–29 6/7	59%	36 6/7 (33 1/7–38 4/7)	38 4/7 (36 6/7–39 6/7)	*0.001*
30–31 6/7	58%	38 0/7 (36 0/7–39 4/7)	38 1/7 (37 4/7–39 5/7)	0.98
32–34	53%	37 6/7 (36 1/7–39 2/7)	38 4/7 (37 1/7–39 5/7)	0.27
Total	55%	37 5/7 (34 4/7–39 1/7)	38 1/7 (36 0/7–39 5/7)	***0.032***

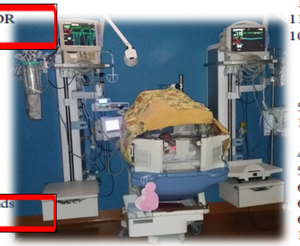
GA, gestational age; IQR, interquartile range.
The bold italic values emphazise the significance of the outcome.

SESSO E OUTCOME NEONATALE

Acta Paediatrica, 2006; 95: 1239–1248

Table II. Neonatal, in-hospital, and early childhood characteristics of follow-up group.

	Girls ($n = 1337$)	Boys ($n = 1216$)	p value[a]
Early neonatal			
Apgar <5 at 5 min	312 (23.6%)	287 (23.9%)	n.s.
CPR in DR	153 (11.4%)	144 (11.9%)	n.s.
Intubation in DR	1111 (83.2%)	1048 (86.3%)	0.03
Surfactant	1086 (81.5%)	1047 (86.4%)	0.0009
In hospital			
Sepsis			
Early	26 (2.0%)	24 (2.0%)	n.s.
Late	529 (39.7%)	522 (43.1%)	0.09
NEC	102 (7.7%)	115 (9.5%)	0.11
Indomethacin			
Prophylactic	431 (33.6%)	453 (38.9%)	0.008
Treatment	513 (38.6%)	477 (39.4%)	n.s.
PDA	607 (45.6%)	555 (45.8%)	n.s.
Postnatal steroids	628 (47.1%)	740 (61.1%)	<0.0001
BPD	629 (47.3%)	684 (56.5%)	<0.0001
IVH 3/4	198 (14.9%)	227 (18.9%)	0.01
PVL	72 (5.7%)	77 (6.6%)	n.s.
ROP ≥3 with plus	178/1286 (13.8%)	204/1180 (17.3%)	0.02
Early childhood			
Discharged on oxygen	372/1316 (28.3%)	423/1195 (35.4%)	0.0001
Living with mother	1211 (91.1%)	1091 (90.1%)	n.s.
Education <HS in primary caregiver	315 (23.7%)	280 (23.3%)	n.s.
Primary insurance			
Medicaid	790 (59.3%)	735 (60.7%)	n.s.
English not primary language	186 (14.0%)	162 (13.4%)	n.s.
Corrected age at follow-up (mo)	19.5±1.4	19.5±1.4	n.s.



Neonatal and infant outcome in boys and girls born very prematurely

Pediatric RESEARCH Volume 71 | Number 3 | March 2012

Table 3. Neonatal outcomes by sex: unadjusted and adjusted for birth weight and gestational age

Outcome	Male	Female	Difference (95% CI)[a] (Male – female)	Adjusted difference (95% CI)[b] (Male – female)
Died/oxygen dependent at 36 wk	72% (308/428)	61% (225/369)	**11% (4, 18)**	**15% (7, 22)**
Normal	28% (120/428)	39% (144/369)		
Oxygen dependent at 36 wk	44% (189/428)	38% (139/369)		
Died	28% (119/428)	23% (86/369)		
Age at death (d)[c]	8.0 (*N* = 119)	5.5 (*N* = 86)	1.31 (0.87, 1.98)	**1.54 (1.01, 2.37)**
Hospital stay (d)[c]	97 (*N* = 308)	86 (*N* = 281)	**1.12 (1.06, 1.18)**	**1.13 (1.08, 1.18)**
Air leak	19% (81/428)	15% (55/369)	4% (–2, 9)	3% (–2, 8)
Pulmonary hemorrhage	15% (63/422)	10% (36/363)	**6% (1, 10)**	**5% (1, 9)**
Postnatal steroids	37% (134/364)	21% (65/316)	**16% (10, 23)**	**17% (10, 25)**
PDA	33% (140/426)	34% (126/367)	–1% (–8, 5)	–3% (–10, 3)
Major cranial ultrasound abnormality	20% (86/423)	12% (43/362)	**8% (3, 14)**	**6% (1, 11)**
ROP (stage 2+)	10% (44/428)	11% (41/369)	–1% (–5, 4)	–2% (–6, 3)
Failed national screening hearing test	26% (41/155)	16% (21/132)	**11% (1, 20)**	10% (–1, 20)
NEC	11% (47/423)	9% (33/364)	2% (–2, 6)	2% (–2, 7)

Respiratory function of very prematurely born infants at follow up: influence of sex

M R Thomas, L Marston, G F Rafferty, S Calvert, N Marlow, J L Peacock, A Greenough

Arch Dis Child Fetal Neonatal Ed 2006;91:F197–F201. doi: 10.1136/adc.2005.081927

SESSO E OUTCOME RESPIRATORIO

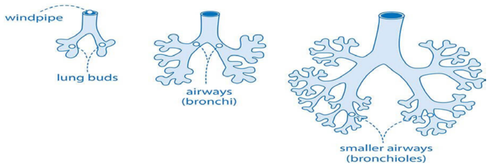
Table 1 Characteristics of study infants according to sex

Variable	Male (n = 42)	Female (n = 34)	Difference* (95% CI)	p Value
Gestational age (weeks)	26.4 (1.5)	26.4 (1.4)	0.02 (−0.93 to 0.97)	0.960
Birth weight (g)	833 (187)	877 (161)	−44 (−155 to 67)	0.282
Birthweight SDS†	−0.81 (0.97)	−0.17 (0.85)	−0.64 (−1.22 to −0.06)	0.003
Below 10th birthweight centile‡	24%	9%	15% (−1% to 31%)	0.126
Randomised to HFOV	57%	53%	4% (−18% to 27%)	0.714
Multiple birth	14%	29%	−15% (−34% to 3%)	0.108
Days ventilated¶	17.0	6.9	2.45 (1.37 to 4.38)	0.003
O_2 dependent at 36 weeks PMA	69%	47%	22% (0% to 44%)	0.052
O_2 dependent at discharge	29%	6%	23% (7% to 38%)	0.016
White ethnic group	79%	68%	11% (−9% to 31%)	0.282
Smoking in pregnancy	24%	14%	10% (−9% to 28%)	0.343
Maternal smoking after birth	24%	18%	6% (−14% to	
Corrected age at measurement (months)	12.55 (0.86)	12.59 (0.99)	−0.04 (−0.4	
Length at measurement (cm)	73.34 (2.96)	75.24 (2.74)	−1.90 (−3.2	
Weight at measurement (kg)	8.54 (1.15)	9.25 (1.34)	−0.71 (−1.2	

Values are mean (SD) or percentages.
*Differences in means and proportions are expressed as male minus female.
†Standard deviation score, standardised for gestational age and sex.[19]
‡Below 10th centile for gestational age and sex.[19]
¶Geometric mean used as variable is skewed. Difference is expressed as a ratio of g
HFOV, High frequency oxygen ventilation; PMA, postmenstrual age.

Sex and the Lung: Observations, Hypotheses, and Future Directions

SESSO E SVILUPPO POLMONARE



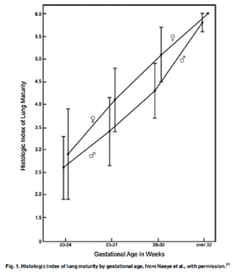


Fig. 1. Histologic index of lung maturity by gestational age, from Ikeeye et al., with permission.[7]

- Nelle fasi canalicolare e sacculare i polmoni dei feti femmine a parità di EG mostrano maggiore maturazione istologica e conseguentemente funzionale (maggiore e più precoce produzione di surfattante)
- Al contrario degli androgeni e ormoni antimulleriani, gli estrogeni stimolano la produzione del surfattante
- Maggiore volume polmonare nei maschi ma ridotto flusso espiratorio (maggiore quantità di cellule muscolari e spessore delle vie aeree)

Pediatric Pulmonology 50:1159–1169 (2015)

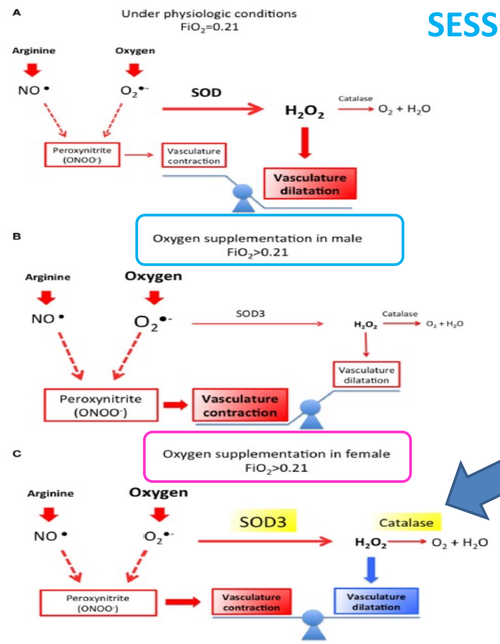
Respiratory function of very prematurely born infants at follow up: influence of sex

M R Thomas, L Marston, G F Rafferty, S Calvert, N Marlow, J L Peacock, A Greenough

Arch Dis Child Fetal Neonatal Ed 2006;**91**:F197–F201. doi: 10.1136/adc.2005.081927

- In very prematurely born infants, lung function at 1 year (corrected for prematurity) was significantly worse in boys than girls, and this effect was not entirely explained by differences in birth variables or current size
- These results are consistent with a greater proportion of prematurely born male infants being symptomatic in infancy and suggest such infants will have greater ongoing respiratory morbidity

SESSO E DANNO DA IPEROSSIA



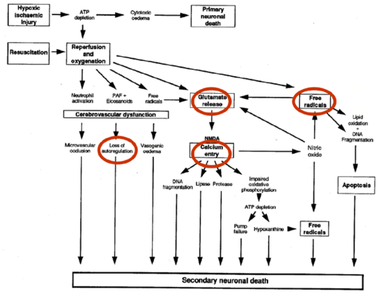
FETI FEMMINE

- **Maggiori enzimi antiossidanti** (SOD, catalasi e glutatione perossidasi)
- Meno risposta vasocostrittiva del tromboxano all'O_2

Frontiers in Pediatrics | www.frontiersin.org 5 April 2018 | Volume 6 | Article 63

SESSO E DANNO CEREBRALE

- La fisiopatologia del danno cerebrale neonatale secondario a cause differenti (asfissia, prematurità e infezione) è legata ai meccanismi di **ipossia-riossigenazione** che generano radicali liberi dell'O_2 e causano stress ossidativo e danno cellulare
- Studi sperimentali di IPOSSIA/ISCHEMIA nei ratti hanno evidenziato una maggiore suscettibilità ai deficit neurocognitivi e comportamentali nei maschi rispetto alle femmine con danno cerebrale simile
- Segnali apoptosici e morte cellulare più comuni nei maschi.

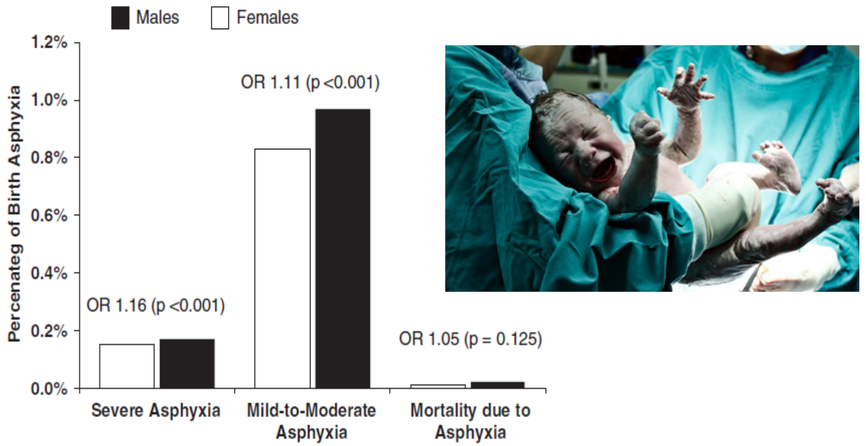


J Bioenerg Biomembr (2016) 48:591–598

Experimental Neurology 254 (2014) 54–67

Impact of race on male predisposition to birth asphyxia

MA Mohamed[1] and H Aly[2]



Journal of Perinatology (2014) 34, 449–452

SESSO E OUTCOME NEUROEVOLUTIVO

Table III. Neurodevelopmental outcomes at 18–22 mo corrected age.

	Girls ($n = 1244$)	Boys ($n = 1118$)	p value[a]
NDI [b]	424 (34.1%)	538 (48.1%)	<0.0001
	$n = 1330$	$n = 1202$	
Moderate–severe CP	97 (7.3%)	129 (10.7%)	0.003
	$n = 1251$	$n = 1126$	
MDI <70	339 (27.1%)	472 (41.9%)	<0.0001
MDI ≥85	559 (44.7%)	363 (32.2%)	<0.0001
	$n = 1235$	$n = 1112$	
PDI <70	236 (19.1%)	294 (26.4%)	<0.0001
PDI ≥85	754 (61.1%)	534 (48.0%)	<0.0001
	$n = 1217$	$n = 1082$	
Unimpaired[c]	443 (36.4%)	261 (24.1%)	<0.0001
Deaf	$n = 1325$	$n = 1194$	
	16 (1.2%)	18 (1.5%)	n.s.
Blind	$n = 1329$	$n = 1207$	
	13 (1%)	13 (1.1%)	n.s.
	$n = 1332$	$n = 1211$	
GMFCS level ≥III	54 (4.1%)	65 (5.4%)	n.s.

Gender differences in neurodevelopmental outcomes among extremely preterm, extremely-low-birthweight infants

Acta Pediatrica, 2006; 95: 1239–1248

Table 4. 24-Month follow-up outcomes ($N = 366$)

Outcome	Male	Female	Difference	Adjusted difference[a]	Adjusted difference[b]	Adjusted difference[c]
Any disability[d] ($n = 363$)	53%	39%	**14% (3, 24)**	**15% (4, 25)**	**15% (3, 27)**	12% (−1, 25)
Cognitive delay[e] ($n = 288$)	35%	19%	**15% (4, 26)**	**17% (6, 28)**	**14% (2, 26)**	8% (−4, 22)
Cough ($n = 366$)	52%	47%	5% (−6, 16)	7% (−4, 18)	6% (−5, 17)	7% (−4, 18)
Wheeze ($n = 354$)	41%	33%	8% (−2, 19)	9% (−2, 19)	9% (−2, 19)	9% (−2, 20)
Any chest medicines ($n = 363$)	62%	52%	10% (−1, 20)	11% (−0, 21)	10% (−1, 21)	12% (0, 23)
Bronchodilators or inhaled steroids ($n = 363$)	48%	31%	**18% (7, 28)**	**20% (10, 31)**	**19% (8, 29)**	**20% (9, 30)**

frontiers in Pediatrics
REVIEW
published: 23 April 2018
doi: 10.3389/fped.2018.00083

SESSO E RISPOSTA AI FARMACI

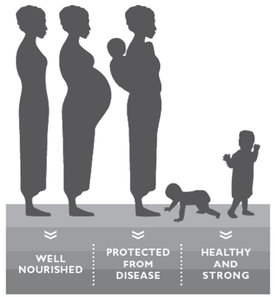
- Pochi studi clinici
- Dati sperimentali su maialini sull'efficacia di farmaci vasoattivi (fenilefrina, norepinefrina, dopamina) nel trattamento della perdita dell'autoregolazione cerebrale nel danno cerebrale traumatico hanno mostrato grandi differenze nella risposta in base all'età e al sesso

Pediatr Res. 2017 July ; 82(1): 108–113. doi:10.1038/pr.2017.83.

- L'uso profilattico dell'Indometacina come neuroprotezione avrebbe effetti maggiorI nel sesso maschile
- Gli steroidi prenatali agiscono meno nel feto maschio

(J Pediatr 2005;147:860-2)

The **first 1,000 days** define a child's future



Why the first 1000 days of life matter

The first 1000 days of life – the period between conception and a child's 2nd birthday – are a unique window of opportunity to support child development and long-term health. This critical period of time has an enormous short- and long-term impact on the health and wellbeing of unborn babies, infants, and young children, as well as on the pregnant and lactating women.[1,2] Environmental factors and nutrition during this 1000 day-window can have positive effects on a baby's growth, brain development, digestive tract, metabolism, and immune system. For this reason, a well-balanced diet with essential nutrients in optimal amounts during early life plays a crucial role in programming future health.

"FETAL ORIGINS HYPOTESIS"
TEORIA DEL *PROGRAMMING*

David Barker 1986
Alan Lucas 1999

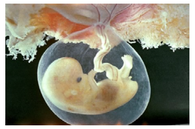
INFLUENZA DELL'AMBIENTE INTRAUTERINO:

- Il feto si adatta alle condizioni sfavorevoli per **sopravvivere**
- Le alterazioni determinate dall'adattamento provocano **disturbi a lungo termine**

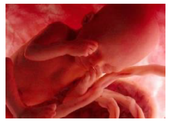
SOPRAVVIVENZA
PATOLOGIE FUTURE

ALTERATO AMBIENTE INTRAUTERINO E *PROGRAMMING*

PERIODO CRITICO



Embrione Feto Neonato



CAMBIAMENTI METABOLICI PERMANENTI

PROGRAMMING

ALTERATA OMEOSTASI GLICIDICA

- Aumentata resistenza insulinica
- Persistente alterazione della risposta tissutale all'insulina

DISFUNZIONE MUSCOLO-SCHELETRICA

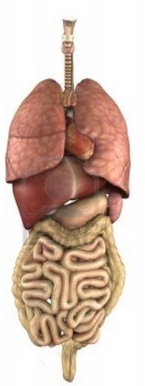
- Sviluppo anormale della muscolatura scheletrica
- Ridotta massa muscolare
- Ridotto numero di recettori insulinici
- Maggiore contenuto intramuscolare di lipidi

ALTERATA FUNZIONE PANCREATICA

- Deposizione lipidica e fibrosi
- Iperinsulinismo

STEATOSI EPATICA

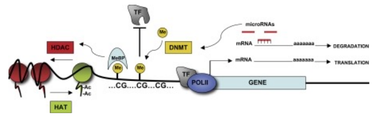
- Insulino-resistenza ⇒ accumulo trigliceridi
- ↑ lipogenesi, ↓ lipolisi

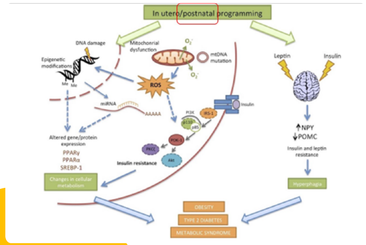


ALTERATA FISIOLOGIA ADIPOSA

- Alterazione di geni regolatori della funzione e differenziazione degli adipociti
- Alterata composizione corporea e eccesso di deposizione di grassi
- Ipertrofia adipociti e adipogenesi (↑ lipogenesi, ↓ lipolisi)

Rkzay Jaf J et al. Curr Cardiovasc Risk Rep 2012





PROGRAMMING ED EPIGENETICA

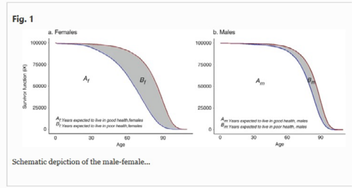
Le alterazioni metaboliche che si verificano nel periodo fetoneonatale (e in seguito) possono essere trasmesse per diverse generazioni come **effetti epigenetici**

MODIFICAZIONI GENETICHE INDOTTE DALL'AMBIENTE senza alterare la sequenza del DNA e che vengono trasmesse alle generazioni successive

Encyclopedia of Gerontology and Population Aging

The Male-Female Health-Mortality Paradox

October 2019

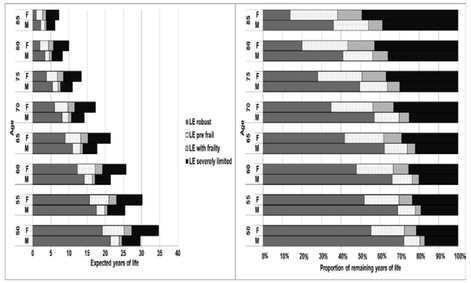


Schematic depiction of the male-female...

The male-female health-mortality paradox results from the fact that females live longer than males but spend a higher proportion of their total life expectancy in poorer health states. The phenomenon is depicted in schematic Fig. 1, where the gray-shaded area represents the proportion of total life expectancy spent in poor health, for females and males, respectively, on panels a and b. It is clear that the gray-shaded areas, representative of poor life expectancy, are larger for women than for men. The sum of the white area and the gray-shaded area is equal to the total life expectancy. Since health is an important predictor of death, the fact that women live longer in spite of a higher proportion of their lives spent in unhealthy state puzzles researchers. Some other terms used to describe the phenomenon are "gender and health paradox," "morbidity paradox," "morbidity-mortality paradox," or "male-female health-survival paradox."

Il sesso “incontra” il genere

‘Men die, women suffer’:
the so-called male–female health paradox



Age and Ageing 2014; 43: 322–228
doi: 10.1093/ageing/aft115
Published electronically 4 August 2013

Cross-national disparities in sex differences in life expectancy with and without frailty

observed sexual disparities. Hence, there is no clear pattern of association within these interactions;

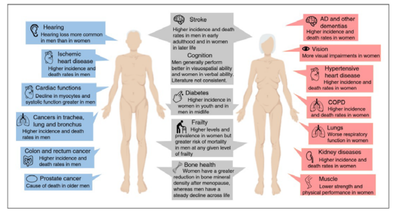


Figure 2. Overview of the most significant sex differences in age-related diseases, functioning and frailty. Abbreviations: AD, Alzheimer's disease; COPD, chronic obstructive pulmonary disease.

Sex differences in biological aging with a focus on human studies

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Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden

Hägg and Jylhävä. eLife 2021;10:e63425. DOI: https://doi.org/10.7554/eLife.63425

Journal of Perinatology (2021) 41:435–444
https://doi.org/10.1038/s41372-020-00897-4

ARTICLE

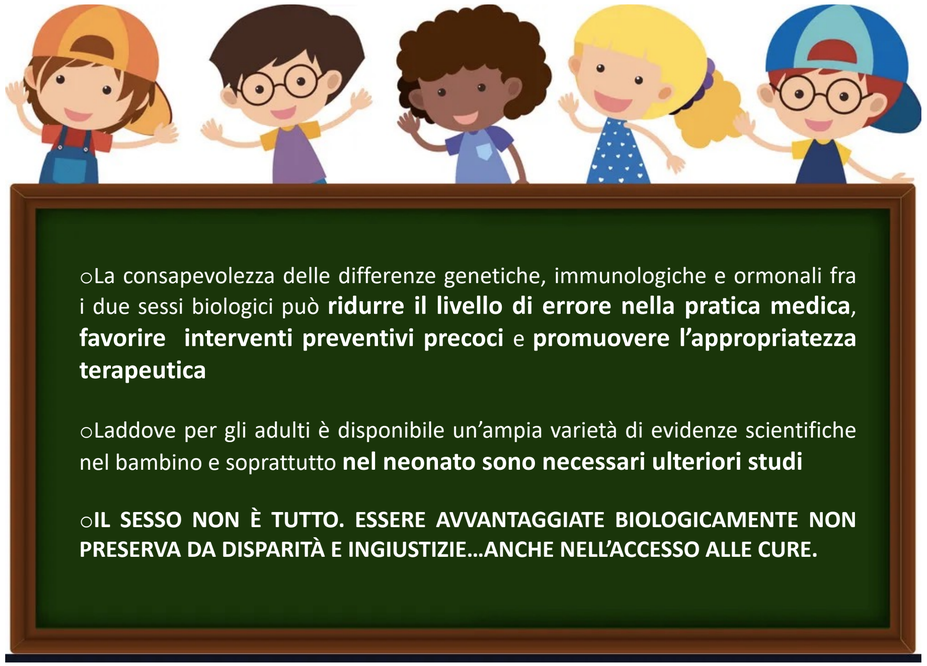
Equity for women in medicine—neonatologists identify issues

Eric Horowitz[1] · Tara M. Randis[2] · Mihail Samnaliev[3] · Renate Savich[4]

Several authors have explored gender differences among physicians related to leadership, rank, compensation, and research productivity [3, 4, 8, 25–32]. Our findings are consistent with these reports, and further found no gender differences among neonatologists in clinical hours worked or acuity of patients. Despite these similarities, our study even after controlling for several confounding factors, found gender remained an independent predictor for being a chair of an institutional committee or leader of a division or group. This is similar to the gender gaps found by others among leadership roles [2–4, 14, 25].

Beyond these differences, our study also found that ender is an independent factor in total compensation of neonatologists, with a reduction of $35,000 per year for women. Similar differences were also seen for both base

To account for differences in leadership attainment and academic rank, earlier studies indicated an association with women choosing clinical duties over research or adminis-rative efforts [11, 33, 34]. Our data, however, found gender o be independently associated with leadership attainment, even after controlling for these factors.



- La consapevolezza delle differenze genetiche, immunologiche e ormonali fra i due sessi biologici può **ridurre il livello di errore nella pratica medica**, **favorire interventi preventivi precoci** e **promuovere l'appropriatezza terapeutica**

- Laddove per gli adulti è disponibile un'ampia varietà di evidenze scientifiche nel bambino e soprattutto **nel neonato sono necessari ulteriori studi**

- **IL SESSO NON È TUTTO. ESSERE AVVANTAGGIATE BIOLOGICAMENTE NON PRESERVA DA DISPARITÀ E INGIUSTIZIE…ANCHE NELL'ACCESSO ALLE CURE.**

Non saremo mai donne,
mai ombre a nessuno.

Cesare Pavese

U.O.C. NEONATOLOGIA E TERAPIA INTENSIVA
NEONATALE UNIVERSITARIA
POLICLINICO BARI
Responsabile Prof Nicola Laforgia

GRAZIE

Delitti in materia di violazione del diritto d'autore (Art. 25-novies, D.Lgs. n. 231/2001) [articolo aggiunto dalla L. n. 99/2009]

- Messa a disposizione del pubblico, in un sistema di reti telematiche, mediante connessioni di qualsiasi genere, di un'opera dell'ingegno protetta, o di parte di essa (art. 171, legge n.633/1941 comma 1 lett. a) bis)
- Reati di cui al punto precedente commessi su opere altrui non destinate alla pubblicazione qualora ne risulti offeso l'onore o la reputazione (art. 171, legge n.633/1941 comma 3)
- Abusiva duplicazione, per trarne profitto, di programmi per elaboratore; importazione, distribuzione, vendita o detenzione a scopo commerciale o imprenditoriale o concessione in locazione di programmi contenuti in supporti non contrassegnati dalla SIAE; predisposizione di mezzi per rimuovere o eludere i dispositivi di protezione di programmi per elaboratori (art. 171-bis legge n.633/1941 comma 1)
- Riproduzione, trasferimento su altro supporto, distribuzione, comunicazione, presentazione o dimostrazione in pubblico, del contenuto di una banca dati; estrazione o reimpiego della banca dati; distribuzione, vendita o concessione in locazione di banche di dati (art. 171-bis legge n.633/1941 comma 2)
- Abusiva duplicazione, riproduzione, trasmissione o diffusione in pubblico con qualsiasi procedimento, in tutto o in parte, di opere dell'ingegno destinate al circuito televisivo, cinematografico, della vendita o del noleggio di dischi, nastri o supporti analoghi o ogni altro supporto contenente fonogrammi o videogrammi di opere musicali, cinematografiche o audiovisive assimilate o sequenze di immagini in movimento; opere letterarie, drammatiche, scientifiche o didattiche, musicali o drammatico musicali, multimediali, anche se inserite in opere collettive o composite o banche dati; riproduzione, duplicazione, trasmissione o diffusione abusiva, vendita o commercio, cessione a qualsiasi titolo o importazione abusiva di oltre cinquanta copie o esemplari di opere tutelate dal diritto d'autore e da diritti connessi; immissione in un sistema di reti telematiche, mediante connessioni di qualsiasi genere, di un'opera dell'ingegno protetta dal diritto d'autore, o parte di essa (art. 171-ter legge n.633/1941)
- Mancata comunicazione alla SIAE dei dati di identificazione dei supporti non soggetti al contrassegno o falsa dichiarazione (art. 171-septies legge n.633/1941)
- Fraudolenta produzione, vendita, importazione, promozione, installazione, modifica, utilizzo per uso pubblico e privato di apparati o parti di apparati atti alla decodificazione di trasmissioni audiovisive ad accesso condizionato effettuate via etere, via satellite, via cavo, in forma sia analogica sia digitale (art. 171-octies legge n.633/1941).

Torna all'inizio