Foliensatz zum Factsheet Pädiatrie

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Inhaltsverzeichnis

Take home messages

- In childhood development, VARIABILITY is the norm and OVERLAP in developmental domains is larger than gender difference.
- There are, however, sex and gender differences related to normal development and in particular to neurodevelopmental disorders and immunological responses.
- In neonates, there is a higher prevalence of birth defects in males. Males, especially when preterm, appear to be more susceptible to respiratory problems and brain injury in the perinatal period, with differences affecting later childhood development.
- Care and treatment of pediatric patients needs to be based on an INDIVIDUAL APPROACH where sex and gender may play a role in specific situations

Gender identity and gender roles

At what age does **gender identity** develop?

- Understanding the concept of gender: 2-3 y
- Gender identity: 3-5 years
- Gender role/expression: 6-7 years

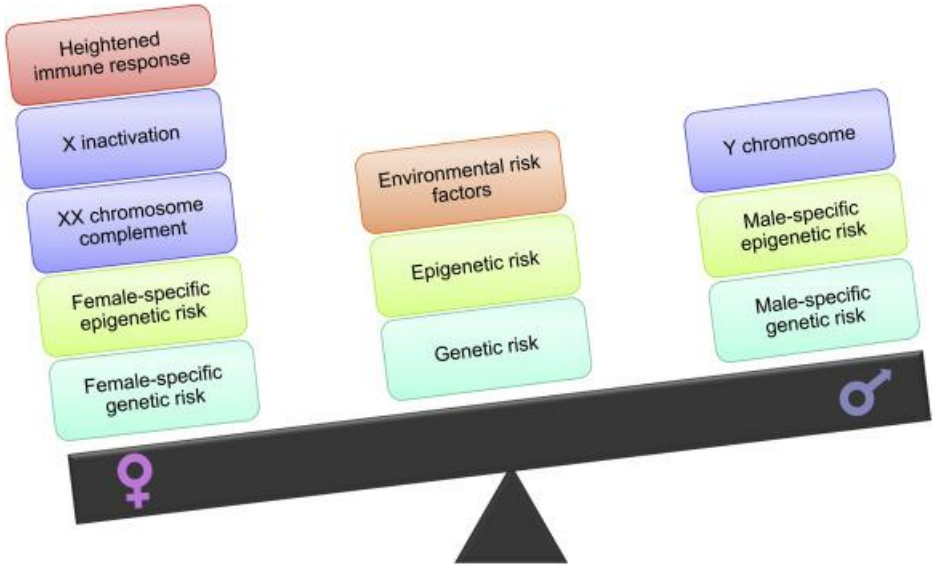
Neonatology

- Prevalence of birth defects higher in males (3.9% male, 2.8% female)
- Higher mortality in early onset neonatal infection in males
- Respiratory problems (RDS) more severe in males
- Males with bronchopulmonary disease at higher risk for impaired lung function later in life
- Preterm males more susceptible to brain injury in perinatal period

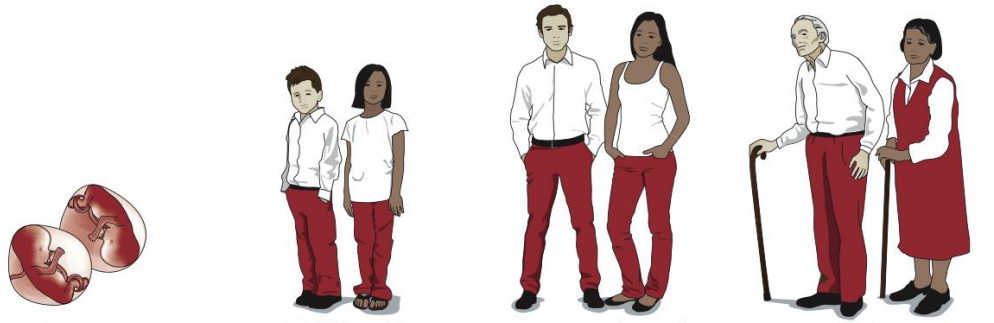
Murat Yurdakök. Sex- and Gender-Based Medicine in Pediatrics. J Pediatr Neonat Individual Med. 2020;9(1):e090125. doi: 10.7363/090125

Courtesy of Uchenna Kennedy

Infectious disease/immunology



Klein SL, Flanagan KL. Sex differences in immune responses. Nat Rev Immunol. 2016; doi: 10.1038/nri.2016.90



Innate immunity	• Increased inflammatory responses in males	↑ Inflammation in males ↑ NK cells in males	↑ Inflammation in females ↑ NK cells in males	↑ Inflammation in males ↑ IL-10 in females ↑ NK cells in females
Adaptive immunity	• Increased IgE levels in males	• CD4/CD8 ratios and $CD4^+$ T cell numbers equal • $CD8^+$ T cell numbers equal • IgA levels in males ≥ females • IgM levels in males ≥ females • IgG and IgM levels equal • B cell numbers equal • T_{reg} cell numbers in males ≥ females	• CD4/CD8 ratios and $CD4^+$ T cells ↑ in females • $CD8^+$ T cells ↑ in males • T cell activation/ proliferation ↑ in females • T_{reg} cells ↑ in males • B cells ↑ in females • Immunoglobulins ↑ in females	• CD4/CD8 ratios and $CD4^+$ T cells ↑ in females • $CD8^+$ T cells ↑ in males • T cell activation/ proliferation ↑ in females • T_{reg} cells ↑ in males • B cells ↑ in females • Immunoglobulins ↑ in females

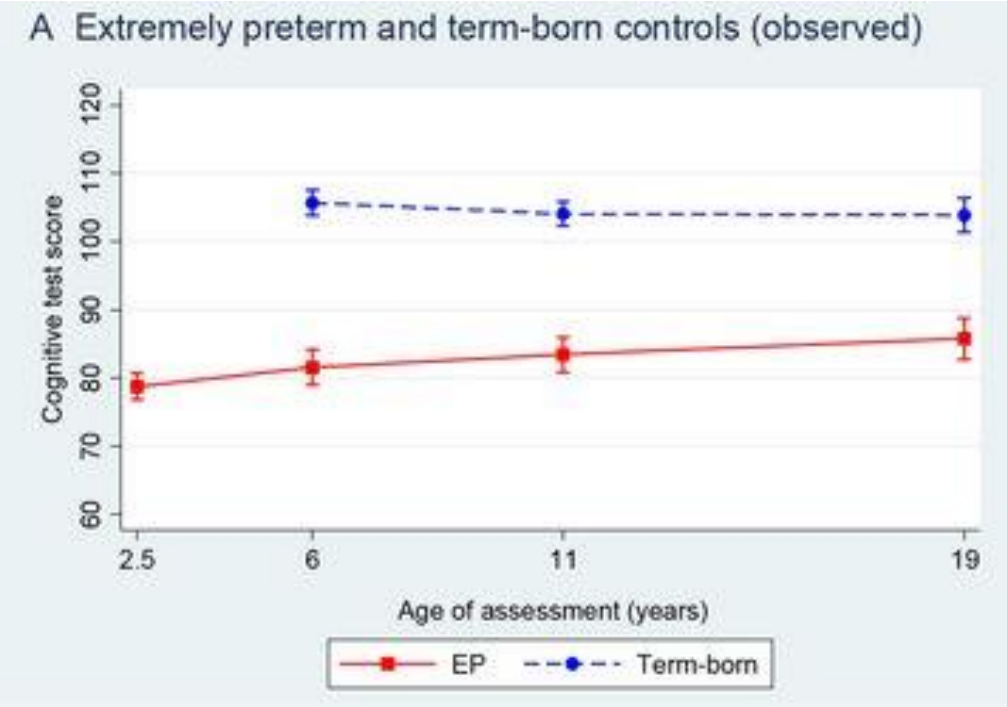
Infectious disease/immunology

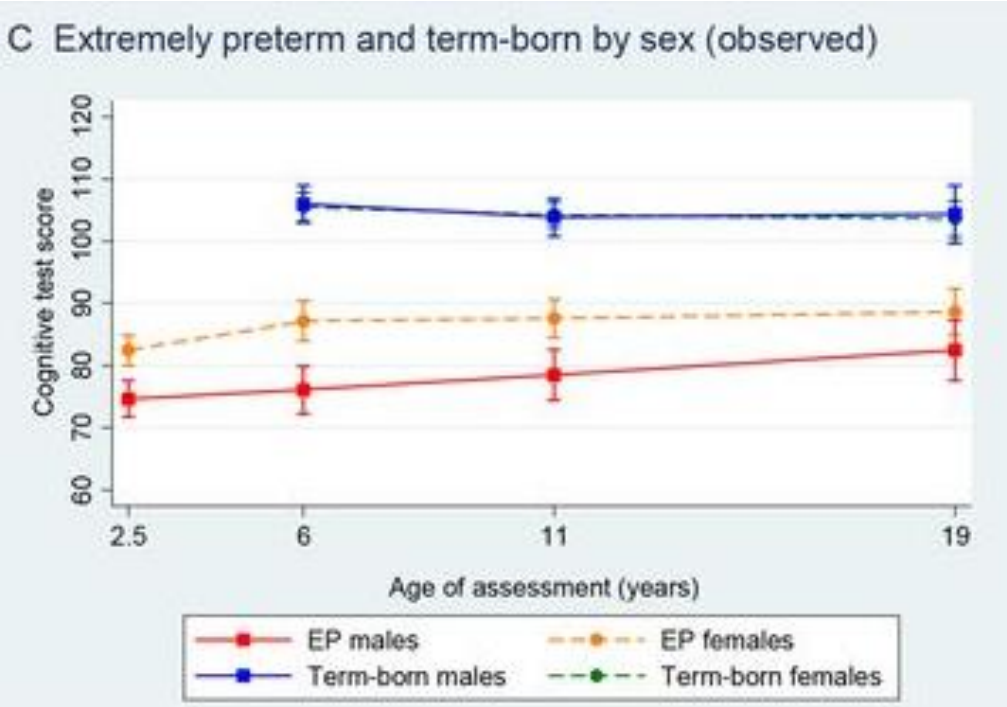
- Prevalence, severity and complications of infectious diseases higher in males
- Females display increased innate and adaptive immune responses to most viral infections
- Twice higher risk of severe congenital CMV disease leading to brain damage in females (induced by immune-inflammatory responses)

- Vaccination
- Females show higher measles, mumps and rubella (MMR) antibody titers that persist longer
- Long-term protection against rubella higher in girls, long-term protective effect of BCG vaccine greater in girls

Yurdakök M, Journal of Pediatric and Neonatal Individualized Medicine 2020;9(1):e090125

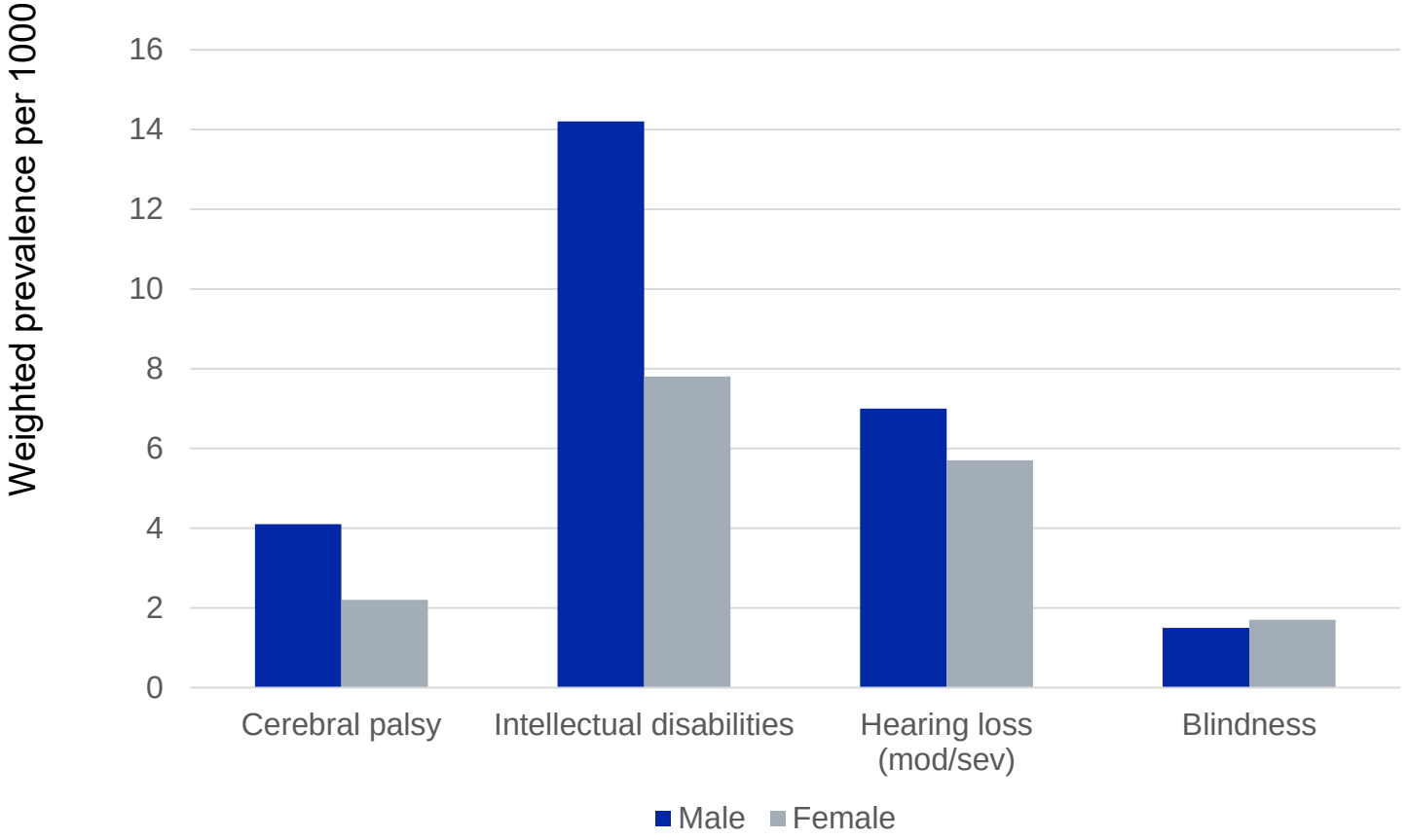
Intellectual development in extremely preterms





Louise Linsell et al. Arch Dis Child 2018;103:363-370

Neurodevelopmental disorders

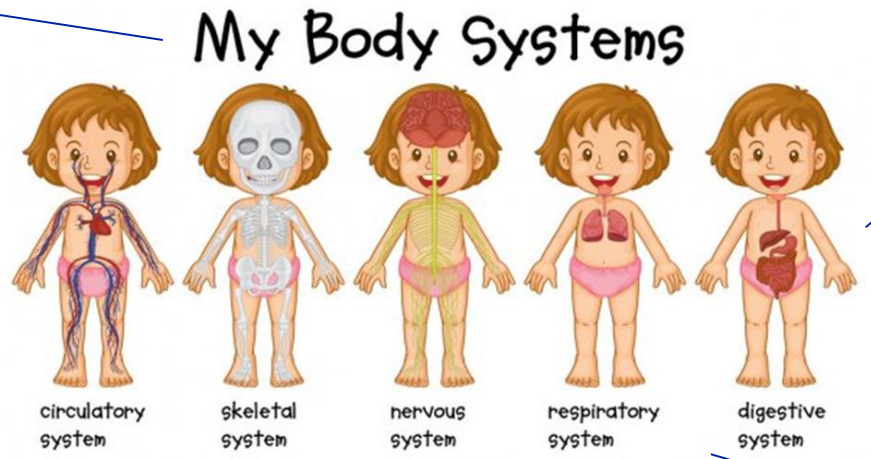


Olzenak McGuire D, Disability and Health Journal 12 (2019) 443e451

Organ-specific differences

Juvenile arthritis predilection for girls, Hashimoto more common in girls – development of autoimmune disease: role of miRNA, sex chromosomes?
Scoliosis more frequent in females – Puberty: estrogens play a role in progression of spine deformation
Females higher risk for congenital dysplasia of the hip

Crohn: childhood: males w higher incidence, adulthood: females



Cardio: Higher risk for death in female pt with congenital heart disease
CHD – more males with CHD surgery and high risk procedures.
Females: higher risk for death in high risk procedures. Marelli Circulation 2010
Sickle cell – higher morbidity in males (lower responsiveness to nitric)
ALL: Female survivors w lower cardiorespiratory fitness

Asthma
- more prevalent in boys age 4-14,
- after puberty more prevalent and severe in women

Bronchiectasis
- more common in males (2:1), but more severe infections and mortality in females (hormone dependent)

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