The Impact of Hyperemesis Gravidarum on Gestational Malnutrition

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Optimal gestational nutrition is the foundation for creating a healthy neonate. The fetal origins hypothesis suggests suboptimal pregnancy nutrition is one of the culprits for adult diseases. Nutrient deficiencies are multi-factorial: medical, anatomic, wars, natural diseases, and socio-economic compromise as well as arising from poorly managed hyperemesis gravidarum.

This poster provides an abbreviated overview of likely consequences from gestational malnutrition.

Maternal deficit	**Fetal consequence**	**Reference / Study** (H=human, A=animal)
Energy, joules or kilocalories	• Low birth weight • Restricted maturation of myelin	Solmi F et al. 2014 (H) Tolcos M et al. 2011 (A)
Protein	• Small for gestational age (SGA) infants • Reduced synaptogenesis • Increased incidence of food allergies	Solmi F et al. 2014 (H) Georgieff MK et al. 2015 (H) Kramer M, Kakuma R 2014 (H)
Omega 3 fatty acids	• Adverse neurodevelopment and childhood behaviors	Gow RV et al. 2014 (H)
Vitamin B 12	• Cerebral atrophy	Kocaoglu C et al. 2014 (H)
Vitamin K	• Vitamin K embryopathy • Intracranial hemorrhage	Toriello H et al. 2013 (H) Eventov et al. 2009 (H)
Vitamin D	• Craniosynostosis	Shetty AK et al. 1998 (H)
Vitamin A	• Sensorineural hearing loss • Xerophthalmia, night blindness	Emmett SC et al. 2014 (H) Akhtar S et al. 2013 (H)
Thiamine/Vitamin B1	• Hypoplastic hippocampus	Ba A et al. 2005 (A)
Choline	• Reduced neurotransmitter acetylcholine and phosphotidylcholine in myelin	Georgieff MK et al. 2015 (H)
Biotin	• Impaired amino acid and fatty acid metabolism	Mock DM 2009 (A)
Folate	• Neural tube defect	Huhta JC et al. 2015 (H)
Vitamin C	• Impaired hippocampal neurogenesis • Altered conversion of dopamine	Tveden et al. 2012 (A) Anderson GH 1981 (H)
Iodine	• Reduced IQ	Zimmermann MB. 2013 (H)
Copper	• SGA infants • Alteration in dopamine synthesis	Mistry HD et al. 2014 (A) Anderson GH 1981 (H)
Iron	• Reduced myelination in brain • Reduced dopamine	Schmidt RJ et al. 2014 (H) Georgieff MK et al. 2015 (H)
Zinc	• SGA infants • Reduced neurotransmitter release from hippocampus	Mistry HD et al. 2014 (H) Georgieff MK et al. 2015 (H)
Selenium	• Alteration in fat metabolism	Mistry HD et al. 2014 (H)

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