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Perinatal nutrition and the developing brain

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The health and wealth of a nation is dependent on an optimal diet and nutritional status of pregnant women as it lays the cornerstone of both physical and mental development in their children who become the future generation. It has been recognized that poor nutrient intake during pregnancy and lactation adversely affects the health of both the pregnant mother and her baby (1). Less affluent societies, especially in the developing world are particularly at risk of maternal 'mis-nutrition' and infant malnutrition. The negative effect of infant malnutrition on a rapidly developing brain has now become a major concern of the United Nations World Food Programme (UN-WFP). It has been said that "if children under two do not receive sufficient nutrition they will be sentenced to a lifetime of mental and physical limitations. We now have what I call the burden of knowledge and WFP is looking for ways to ensure we prioritize those under twos, the most vulnerable of all in the world" (Josette Shaaron Executive Director's report to the Board of UN-WFP; June 2010). Unbalanced, mismatched maternal dietary and nutritional choices ('mis-nutrition') during pregnancy and lactation can have very significant impact on fetal and neonatal brain development. Human and animal studies have shown that malnutrition has irreversible effects on brain size and function. Approximately 70% of brain development occurs before birth and nearly all the rest while the baby is breast-feeding so during this phase of the child's life adequate maternal nutrition is mandatory for normal brain development. More recently, there has been recognition of the importance of Long Chain Polyunsaturated Fatty Acids (LCPUFAs) such as Arachidonic acid (ArA), an omega-6 fatty acid and Docosahexaenoic acid (DHA), an omega-3 fatty acid obtained mainly from fish oil and other animal sources. These LCPUFAs have been shown to be essential for infant brain growth and development and to also significantly impact on pregnant women's health. Therefore, our focus in this session will be to explore the impact of these LCPUFAs on the developing brain.

Biography

She is Consultant in Neonatal Pediatrics at Chelsea & Westminster Hospital, London UK (Dec 2000 – date), Honorary Senior Lecturer in Child Health; Division of Medicine, Imperial College London, UK and also Lead of Specialist Training and the current Neonatal College Tutor. Their unit is a specialist perinatal tertiary center and designated unit in the sector for neonatal surgery. Her area of interest is research and clinical care aimed at enhancing the brain development of high risk babies is focused on factors such as nutrition especially essential lipids of the mother and newborn infants in relation to their developmental and health outcomes - Nutritional intervention in the pre-conception period, pregnancy, newborn period in baby and assess the effect on brain development and disorders in infants.

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