Children with Chronic Protein-Energy Deficiency have Delayed Cognitive Development

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Introduction

Malnutrition is caused by a lack of protein, carbs, micronutrients, and recurrent infections. Malnutrition is widespread in India. According to a WHO research from 1990 to 1997, 52% of Indian children under the age of five suffer from severe to moderate malnutrition. Stunting affects around 35% of preschool children in Sub-Saharan Africa. Malnutrition is linked to both structural and functional brain disease. Tissue damage, growth retardation, disordered differentiation, loss in synapses and synaptic neurotransmitters, delayed myelination, and diminished overall development of dendritic arborization in the developing brain are all symptoms of structural malnutrition. Malnutrition is defined by the World Health Organization as "the cellular imbalance between the availability of energy and nutrients and the body's demand for them to ensure maintenance, development, and particular functioning". Malnutrition has been blamed on a lack of food for millennia. Malnutrition is a condition caused by a lack of a few macronutrients (protein-energy insufficiency, vitamin, and mineral deficiency), a surplus of macronutrients (obesity), or excessive quantities of drugs such as alcohol.

The construction of neural networks is disrupted when the temporal sequences of brain maturation are disrupted. There have been reports of changes in brain function that may be related to long-term cognitive deficits.

In malnourished children in India, a wide spectrum of cognitive abnormalities has been reported. Malnourished children were tested from 4 to 52 weeks of age using Gessell's developmental schedule research. Malnourished children in grades II and III exhibited impaired motor, adaptive, linguistic, and personal-social development. Measures of social development (Vineland social maturity scale), visuomotor coordination (Bender gestalt test), and memory were used to examine rural children in primary school between the ages of 6-8 years (free recall of words, pictures, and objects). Social competence, visuomotor coordination, and memory problems were all linked to malnutrition. Boys' immediate memories were affected by malnutrition more than females'. Malnourished boys showed more immediate memory impairment for words, images, and objects, but malnourished girls only experienced immediate memory impairment for pictures. Words and images of starving boys were remembered with a delay. The delayed recollection of single words was impaired in malnourished females. Malin's Indian adaption of the Wechsler's intelligence scale for children was used by the same authors to assess malnourished children's IQ.

Both anatomical and functional disorders of the brain are linked to malnutrition.

Growth retardation, a decrease in synapses, disordered differentiation, tissue injury, delayed myelination, synaptic neurotransmitters, and a loss in total dendritic arborization of the developing brain are all symptoms of structural malnutrition. There are differences in the temporal sequences of brain maturation, which disrupt neural circuit creation. Long-term changes in brain function have been linked to the severity of malnutrition-related cognitive deficits.

Protein-Energy Malnutrition (PEM) is an axiom that refers to a collection of related illnesses that includes kwashiorkor, marasmus, and kwashiorkor-marasmus intermediate phases. Jelliffe coined the term "protein-calorie malnutrition" in 1959, but "PEM" has now generally superseded it. Hypoglycemia, hypothermia, severe infection, and electrolyte imbalances are among the conditions that PEM patients are more likely to experience. Premature delivery stopped breastfeeding, mental illness, vomiting, contagious TB, and parasitic infections, such as measles, malaria, diarrhea, and whooping cough, are all consequences of PEM.

The Gomez or Wellcome classifications have been used to define severe malnutrition in almost all investigations. These do not identify a distinct disease, but rather a wide range of clinical symptoms with a variety of etiologies. A varying level of infection, as well as zinc, manganese, copper, and iron deficits, as well as protein and energy, may be present. These factors may have varying effects on growth and behavior. In investigations investigating the link between mental development and severe malnutrition, data on existing deficits are rarely accessible or addressed. Despite a vast number of studies, only a few researchers have looked at the role of stunting, wasting, and edema in male development. As a result, any understanding of the literature is limited by the improper categorization of a diverse set of variables.

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