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Commentary Open Access

Reconsidering Our Investments: A Commentary on Gut-Brain Health

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Abstract

Low gut microbial diversity is linked to increased symptoms of psychopathology. Genetic and molecular research reveals the importance of diversifying and nourishing the bacteria in the microbiome to promote mental health through the gut-brain axis, yet threat to human microbial health continues to exist in industrialized regions. While adults may consent to the consequences of poor gut health, children do not have that option. This commentary presents the viewpoint that, to thrive as a species, humans must invest in the gut health of children. Strategic ways of investing are discussed.

Commentary

A smiling child eats breakfast and afterward is overcome with agitation and anger. A cheerful student eats lunch and later experiences nervousness and crying spells. A bright youngster eats a snack and loses focus during school. Surely, these cognitive and emotional responses are characteristic of many children, but what contributes to their intensity and frequency? Increasing evidence indicates that gut health is inextricably linked to emotional and mental well-being [1-3]. Unfortunately, many individuals are not aware of this research and/or do not have access to important nutritional resources. The purpose of this commentary is to advocate for children's emotional well-being by way of microbial diversity. While adults may consent to the consequences of poor gut health, children do not have that option. As adults, it is our responsibility to protect all children from this internal pollution.

There are trillions of bacteria in the healthy human gut (also known as the gastrointestinal tract). These bacteria constitute the microbiome, an ecosystem that contains approximately 90 percent of our cells and helps create neurotransmitters essential for positive mood stabilization and stress management. A diverse microbiome is vital for our survival and begins developing in the womb [4]. By the age of three, the healthy human has developed a gut microbial ecosystem resembling an adult's in its ability to facilitate healing, resilience, and well-being [5]. The bad news is that most of the food we serve to children, especially at school, is harmful to the gut; the good news is that guts are extremely resilient.

People living in industrialized regions tend to have poor gut health largely because our bodies were designed to be fueled by earth's nutrients rather than by processed products. Regularly, people consume infinite combinations of neurotoxins including hybridized and artificially concocted food full of hormones, antibiotics, pesticides, dyes, sugars, and preservatives. When ingested, these unnatural substances make the gastrointestinal walls porous, leak into the bloodstream, glide past the blood-brain barrier, and poison the brain.

Fortunately, people can repair their guts by consuming probiotics and prebiotics. Probiotics are live bacteria that replenish the microbiome and can be found in fermented food and drinks such as sauerkraut, kimchi, yogurt, kefir, and kombucha. Prebiotics nourish the bacteria in the microbiome and can be found in onions, garlic, radishes, and more. (Organic is always better since pesticides harm the gut) [6,7]. A thriving microbiome is a requisite for mental and emotional wellbeing.

Studies examining relationships between the gut and psychological variables have found that repairing the gut attenuates the stress response [8] and reduces symptoms of autism [9-11], anxiety and depression [12-16], bipolar disorder [17], eating disorders [18], and schizophrenia [19,20]. Although promoting gut health may not be the prerogative of all healthcare providers, many do promote patients' health via gut repair [21]; however, larger systemic barriers seem to halt our daily attempts to nourish children. Aiming to include all people in this transformation, we must continue to establish financial and logistical infrastructure that will support people who lack resources to initiate this change. Collectively, we need to advocate for the health of all children to facilitate healing, resilience, and well-being for future generations.

A major systemic improvement could occur through school meal programs, which largely ignore the science of gut and brain health. Ironically, in an environment where children go to learn, children's brains are becoming increasingly malnourished. In 2016, Congress enacted the Improving Child Nutrition and Education Act, which states that schools must meet "minimum nutritional requirements" prescribed by the Secretary based on "tested nutrition research." Although this policy seems to promote increased child well-being, it is not likely to facilitate optimal health if Congress members are strategically selective in the literature they consult. For example, the bill outlines a need to increase "milk consumption in schools in a manner consistent with the number of servings recommended under such Dietary Guidelines." While there is a lack of transparency about what research and which funding agencies support the Dietary Guidelines, there is also evidence indicating that cow milk contributes to gut leakiness and an increasingly early onset of puberty [22,23]. Let us continue to search for loopholes and advocate for change; children need us to invest in them.

As a continuously evolving species, it is our duty to help future generations thrive and to acknowledge this paramount branch of research for understanding psychiatric disorders [24]. For too long,

food corporations have shaped human behavior so that people excuse their consumption of neurotoxins for the sake of companies' profits and immediate gratification [25]. Might children deserve better? Akin to how we teach children that brushing their teeth before bed and sleeping through the night is good for their health, it is our responsibility to inform them that nourishing the gut is a valuable and essential component to living a high quality, long life.

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