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Postpartum Digestion Is Not Normal Digestion: Why Nutrition Must Change After Birth

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Postpartum nutrition is often discussed as if the primary challenge were food quality. Common recommendations include prioritizing whole foods, focusing on nutrient density, avoiding ultra-processed ingredients, increasing protein intake, balancing blood sugar, and supporting hormones. These recommendations are familiar, widely accepted, and on their own, insufficient. An often-overlooked question is not what postpartum women should eat, but whether their bodies can digest and absorb what they are eating in the first place. This distinction matters more than most clinical conversations allow. Nourishment is not defined by the nutrient content of food alone, but by what the body can break down, transport, and utilize. Food that cannot be digested does not nourish—regardless of how nutrient-dense it appears on paper.

Postpartum nutrition may fall short when it assumes that digestion is intact. It is not. After birth, the maternal body enters a distinct physiological state characterized by tissue repair, blood volume replacement, immune recalibration, neurological reorganization, hormonal transition, and, for many women, sustained milk production (Chauhan & Tadi, 2022; Soma-Pillay et al., 2016). These processes are energetically expensive. To meet that cost, the body redistributes resources. Digestion, itself an energy-intensive process, is often deprioritized (McEwen, 1998; Taché et al., 2001). This is not pathology; it reflects underlying physiological adaptation.

Yet most nutritional frameworks applied to postpartum assume a digestive capacity that closely resembles that of a non-postpartum adult. They emphasize nutrient density without interrogating digestive load. The result is a persistent clinical paradox: women report eating well yet continue to experience fatigue, bloating, anxiety, nutrient deficiency symptoms, and stalled recovery. Symptoms persist despite apparent dietary adequacy. When digestion is impaired, nutritional sufficiency cannot be assumed from intake alone. This perspective makes a precise argument: postpartum nutrition cannot be evaluated without first understanding postpartum digestion. Until digestive and absorptive capacity are accounted for, debates about food quality, supplementation, or dietary composition are premature. Nutrient density is not the same as nourishment. And nourishment is not achieved through intake alone.

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Postpartum Is a Digestive Transition State, Not a Return to Baseline

Postpartum is commonly described as a period of recovery—a return to normal after pregnancy ends. This framing is clinically convenient and biologically inaccurate. Birth does not mark a return to baseline. It marks a transition between physiological states. During pregnancy, the maternal body undergoes extensive structural, hormonal, metabolic, and immunological adaptation to support fetal growth (Mor & Cardenas, 2010; Soma-Pillay et al., 2016). Blood volume expands. Organs shift. The endocrine system operates under a pregnancy-dominant hormonal environment. Birth does not instantly reverse these changes. Instead, the body enters a new phase of adaptation that prioritizes survival, repair, and milk production—a phase that is metabolically demanding and neurologically intense (Butte & King, 2005; Hoekzema et al., 2017).

Digestion sits at the center of this transition. The postpartum body must simultaneously repair tissue, restore blood volume, recalibrate hormonal signaling, regulate immune activity, support neurological adaptation amid sleep disruption, and produce breast milk around the clock (Butte & King, 2005; Eunice Kennedy Shriver National Institute of Child Health and Human Development [NICHD], 2017). Each of these processes carries a significant energetic cost. Systems essential for immediate survival and infant care are prioritized; others, such as digestion, often operate at reduced capacity. This is not dysfunction. It is triage.

Yet most nutritional guidance applied to postpartum assumes a digestive system functioning at full adult capacity. When postpartum is understood as a digestive transition state, several common observations begin to make clinical sense: increased bloating, slowed digestion, food aversions, heightened sensitivity to previously tolerated foods, and irregular appetite. These are not random symptoms, nor are they simply hormonal. They are predictable expressions of a body reallocating resources during a period of intense internal demand (McEwen & Wingfield, 2003). Until postpartum is recognized as a distinct digestive phase, not a nutritional continuation of pregnancy or a return to pre-pregnancy norms, any discussion of postpartum nutrition remains physiologically incomplete.

Digestion After Birth Is Governed by the Nervous System

Digestion is not a mechanical process. It is a neurological one. Long before food is broken down by enzymes or absorbed across the intestinal wall, digestion is initiated, regulated, and sustained by the nervous system, specifically through the coordinated activity of the enteric and autonomic nervous systems (Furness, 2012; Konturek et al., 2004). The enteric nervous system, sometimes described as the “second brain,” contains hundreds of millions of neurons embedded within the gastrointestinal tract and operates in close bidirectional communication with the central nervous system via the vagus nerve (Bonaz et al., 2018; Furness, 2012). Its function is directly responsive to the autonomic state. When parasympathetic tone predominates, digestive activity is robust: gastric acid is secreted, enzymes are released, motility is coordinated, and absorption proceeds efficiently. When sympathetic signaling predominates, these processes are suppressed in favor of more immediate survival demands (Mayer, 2000).

Postpartum is a neurologically intensive period. Birth itself initiates a cascade of neuroendocrine signaling, including activation of stress pathways necessary for survival and adaptation (Woolf, 1992). In the weeks and months that follow, the maternal nervous system remains under sustained demand: interrupted sleep, continuous sensory input, vigilance toward a dependent infant, physical recovery from labor, and hormonal recalibration all place ongoing load on autonomic regulation (Kim et al., 2010; Swain, 2011). This state is adaptive, not pathological. But it shapes digestion in predictable and measurable ways. Because autonomic regulation also underpins emotional processing and stress reactivity, these digestive shifts may co-occur with changes in mood, affect regulation, and maternal well-being, further complicating the clinical picture in the early postpartum period.

When neurological signaling shifts toward sympathetic dominance, digestion becomes constrained through specific pathways. Gastric acid production is reduced, as hydrochloric acid secretion depends on adequate vagal (parasympathetic) tone; when vagal tone is diminished, protein denaturation and early mineral absorption are impaired (Mayer, 2000; Taché et al., 2001). Pancreatic enzyme secretion becomes less robust, as the release of proteases, lipases, and amylases is regulated through neurohormonal signaling; under stress-dominant conditions, enzyme output may be insufficient for the volume or complexity of food consumed (Taché et al., 2001). Bile release and fat emulsification are disrupted, as bile flow requires coordinated nervous system signaling between the liver, gallbladder, and intestine; reduced bile availability compromises fat digestion and the absorption of fat-soluble nutrients even when dietary intake is adequate. Intestinal motility becomes less coordinated, as peristalsis relies on enteric nervous system signaling modulated by autonomic input; when this coordination is impaired, transit time may slow or become irregular, increasing fermentation, gas production, and discomfort while reducing efficient nutrient uptake (Furness, 2012).

Blood flow is redirected away from the gastrointestinal tract, as sympathetic-dominant states prioritize circulation toward muscles, brain, and vital organs; reduced splanchnic blood flow limits the gut's capacity to absorb and transport nutrients effectively (Mayer, 2000). Intestinal permeability may increase transiently, as stress signaling and inflammatory mediators can alter tight junction integrity, increasing permeability in the short term and heightening sensitivity to foods that were previously well tolerated (Bischoff et al., 2014). Finally, the gut microbiome becomes more reactive and less stable, as it underwent intentional adaptive shifts throughout the third trimester; birth, blood loss, stress hormones, and immune recalibration create further disruption, and antibiotic exposure or surgical delivery can amplify this instability (Koren et al., 2012).

None of these changes requires pathology. They reflect a digestive system operating under neurological constraint during a period of extraordinary physiological demand. Taken together, they create a clear clinical limitation: digestive capacity in postpartum is often reduced at the very moment nutritional demand is highest. When digestion and absorption are constrained, nourishment cannot be assessed by food quality alone. When nutritional demand rises as absorptive capacity narrows, depletion becomes the expected outcome.

Postpartum Digestion Is Not Primarily a Hormone Problem

Postpartum digestive changes are frequently attributed to hormonal fluctuation. This explanation is not incorrect, but it is incomplete, and when treated as sufficient, it obscures the actual physiological order of operations. After birth, the maternal endocrine environment shifts rapidly. Estrogen and progesterone fall sharply following placental separation. Prolactin rises to support lactation. Cortisol patterns shift in response to sleep disruption, metabolic demand, and physiological stress. Oxytocin is released in pulses during breastfeeding, skin-to-skin contact, and bonding. Each of these hormones has documented effects on gastrointestinal function (Coquoz et al., 2022; Liu et al., 2024; López-Vicchi et al., 2020; Nie et al., 2018).

What is often missed is why these hormonal changes behave as they do. Hormones do not initiate postpartum physiology. They respond to it. They respond first to the biological event of birth, and then continuously to the state of the nervous system in the weeks and months that follow. Hormones are messengers. They amplify, modulate, and reflect the body's internal conditions, but they do not operate as independent control systems.

Estrogen plays a modulatory role in gastrointestinal motility and mucosal integrity; its withdrawal after birth reflects the end of pregnancy physiology, not a malfunction (Nie et al., 2018). Progesterone's relaxing effect on smooth muscle is removed precipitously after birth, but this does not automatically restore digestive efficiency; it removes a stabilizing influence at the same moment the nervous system is adapting to recovery and metabolic strain (Coquoz et al., 2022). Dysregulated cortisol patterns, common in postpartum due to sleep fragmentation and physiological demand, are associated with suppressed digestive secretions, altered gut permeability, and impaired nutrient assimilation, but cortisol patterns are themselves shaped by nervous system signaling (Mayer, 2000; Woolf, 1992). Oxytocin can support parasympathetic activity under conditions of safety and rest, but it does not compensate for sustained sympathetic dominance; pulsatile oxytocin release during breastfeeding cannot neutralize ongoing sleep deprivation, unresolved pain, or inadequate recovery (Liu et al., 2024; Uvnas-Moberg & Petersson, 2005). The conclusion is the same regardless of framing: hormonal shifts after birth do not guarantee digestive efficiency. In many cases, they signal a body adapting under constraint, because hormones do not create digestive capacity; they respond to the conditions that shape it.

Depletion Is the Predictable Outcome of Modern Reproduction

Postpartum depletion is often framed as a consequence of what happens after birth. This framing is also incomplete. Many women enter postpartum already nutritionally compromised. The epidemiological data are consistent: an estimated 89% of postpartum women are vitamin D deficient (Ghafarzadeh et al., 2021); 80–90% of pregnant women fail to meet DHA recommendations (Nordgren et al., 2017); between 37% and 80% of postpartum women, depending on population, experience iron deficiency anemia (Azami et al., 2019; Holm et al., 2025); and approximately 79% of pregnancy women in specific regions demonstrate selenium deficiency (Filipowicz et al., 2022). These are not marginal deficiencies. They represent a pattern of systemic nutritional compromise upon entering the postpartum period.

Pregnancy is one of the most metabolically demanding periods in the human life cycle (King, 2000). The developing fetus requires a continuous supply of amino acids, fatty acids, minerals, and micronutrients. When intake or absorption is insufficient, the maternal body compensates by drawing on its own reserves, a biological priority system that protects fetal development at maternal cost (King, 2000). In theory, pregnancy nutrition would replenish what is used. In practice, modern conditions make this unlikely for many women: declining food quality, inadequate nutrition education, and systemic inequities in food access all constrain what women can consume and absorb during pregnancy.

Birth itself compounds this demand. Blood loss, tissue trauma, inflammation, and neurological stress are inherent to delivery, even in uncomplicated vaginal births (Soma-Pillay et al., 2016). What follows is not rest, but continued output: healing, caregiving, and often sustained milk production, which draw an additional 500 calories per day in metabolic expenditure (Butte & King, 2005; Eunice Kennedy Shriver NICHD, 2017). These processes draw from the same reserves that pregnancy already taxed.

When this sequence is viewed as a continuum, pregnancy, birth, and postpartum are compounding phases of depletion, and the emergence of symptoms becomes logical rather than alarming. It is important to be precise: this level of depletion is common under modern conditions, but it is not biologically optimal. It is not what the female body was designed to experience. The fact that depletion is widespread does not render it normal in any physiological sense. It indicates that the systems designed to protect and restore the postpartum mother have been eroded.

Layered on top of this nutritional vulnerability is the digestive constraint already described. When digestion and absorption are limited at the very moment demand peaks, the body compensates by drawing from internal reserves. Iron is mobilized from stores. Minerals are redirected from bone and tissue. Amino acids are diverted from muscle and connective tissue. Fatty acids are repurposed from cellular membranes. These adaptations are intelligent survival mechanisms, but over time, reserve depletion reduces resilience, repair slows, hormonal signaling becomes less stable, neurological buffering narrows, and immune tolerance shifts. What begins as adaptation becomes vulnerability. This is why postpartum depletion so often presents as a constellation of symptoms rather than a single deficiency. Fatigue, mood instability, cognitive fog, digestive sensitivity, immune suppression, musculoskeletal pain, and delayed recovery are not separate problems. They are expressions of a system operating without adequate reserves—a predictable outcome of modern reproduction, not individual maternal failure.

Postpartum Digestive Insufficiency: A Proposed Framework

At this point in the discussion, the central constraint in postpartum nutrition can be named clearly. The primary limitation is not food quality, caloric intake, or dietary compliance. It is what this perspective proposes to term postpartum digestive insufficiency: a temporary, biologically normal state in which the body's capacity to break down, absorb, and assimilate nutrients is intentionally reduced relative to demand. This is not dysfunction. It is design.

After birth, the maternal body shifts into a phase of conservation and prioritization. Energy is redirected toward healing, immune recalibration, neurological adaptation, and milk production. Digestion, an energetically expensive process, is modulated accordingly. The system does not shut down; it becomes selective. This selectivity functions as a physiological filter. It favors foods that are nutrient-dense, bioavailable, and low in digestive cost, while making foods that require excessive enzymatic output, prolonged motility, or high metabolic expenditure more difficult to process. In this way, the postpartum body does not signal weakness. It signals wisdom.

Historically, this signal appears to have been understood. Across cultures and time periods, postpartum nutrition converged around the same principles: foods that were cooked, softened, warmed, mineral-rich, and easy to assimilate (Carmody et al., 2011; Fu et al., 2022). The language varied—digestive fire, warmth, rebuilding—reflecting culturally distinct explanatory models of a shared physiological reality, but the biological recognition was consistent. The postpartum body does not require less nourishment. It requires nourishment that costs less energy to access.

It is important to distinguish between digestive insufficiency and depletion. Digestive insufficiency is biologically ideal in postpartum. Depletion is not. When digestive insufficiency is addressed with appropriate nutritional care, prioritizing foods for absorbability and digestive accessibility, reserves can be preserved, and recovery can proceed without significant drawdown. Depletion occurs not because digestive insufficiency exists, but because it is unrecognized and unsupported. This distinction reframes the clinical conversation. Nourishment in postpartum cannot be evaluated by caloric intake or nutrient density alone. It must be assessed by what the body can digest, absorb, and utilize without demanding more energy than the system can supply. Absorption, not intake, sets the ceiling on postpartum recovery.

Why Conventional Healthy Eating Often Backfires After Birth

When postpartum digestion is understood as an adaptive, energy-conserving state, a common clinical paradox becomes easier to explain. Many women report eating well after birth, prioritizing whole foods, fiber, raw vegetables, smoothies, salads, and dietary variety, yet feel progressively worse. Bloating increases. Energy declines. Digestion becomes uncomfortable. Recovery stalls. The issue is not that these foods lack nutrients, but that they often require more digestive work than the postpartum body is prepared to provide. Conventional healthy-eating frameworks are built for bodies with stable digestion, ample parasympathetic tone, and low repair demand. They assume robust stomach acid production, sufficient enzyme output, coordinated motility, and abundant metabolic energy. Postpartum digestion, by design, does not operate under these assumptions.

Raw foods, large salads, high-fiber meals, and cold or blended preparations all increase digestive workload (Carmody et al., 2011; Fu et al., 2022; Sun et al., 1988). Lean proteins require greater enzymatic breakdown than fats (Ajomiwe et al., 2024). Continuous dietary variety increases signaling demands on a system already under neurological load. Individually, these choices may appear healthful. Collectively, they can strain digestion when absorbability is the limiting factor.

This is why postpartum digestive distress is so often misattributed to food intolerance or sensitivity. The food itself is not inherently problematic. The timing and digestive cost are mismatched to physiological capacity. Importantly, this mismatch is temporary. Foods that are difficult to digest in early postpartum may be well tolerated once digestion stabilizes. The problem is not the food. It is the assumption that postpartum digestion should mirror non-postpartum digestion immediately after birth. When healthy eating is defined by nutrient density alone, without regard for digestive effort, it can unintentionally undermine nourishment. Postpartum nutrition does not require abandoning health principles. It requires reordering them. In this phase, nourishment is not determined by how wholesome a food appears, but by how efficiently the body can access its contents.

A Digestibility-First Framework for Postpartum Nutrition

Once postpartum digestion is understood as an adaptive, energy-conserving state, the first priority of nutrition becomes clear. The initial job of postpartum nutrition is not optimization, variety, or supplementation. It is reducing digestive load. This does not mean eating less. It means asking the digestive system to do less work to access what the body urgently needs. When digestion is supported in this way, absorption improves, energy is conserved, and nourishment becomes possible. Clinically, this framework suggests that early postpartum nutritional guidance should prioritize digestibility, meal simplicity, and nervous system support alongside nutrient adequacy.

Across cultures, time periods, and geographic regions, postpartum food traditions converged around this same biological principle (Carmody et al., 2011). While the ingredients differed, the logic remained the same. Foods were selected not only for nutrient density, but for how little energy they required to digest. These traditions emphasized foods that were already partially broken down before reaching the gut: long-cooked soups and stews, mineral-rich broths, slow-simmered proteins, softened vegetables, and warm or semi-solid meals that required minimal enzymatic effort and gentle motility to assimilate. In contemporary practice, this same principle applies to steaming, slow cooking, blending, and frozen preparations warmed before eating, where mechanical breakdown preserves nutrient content while reducing digestive demand.

Animal-based foods played a central role in many of these practices, not out of ideology, but practicality. Animal proteins provide complete amino acid profiles and highly bioavailable minerals in forms that the postpartum body can access more efficiently than many plant sources (Ajomiwe et al., 2024; Innis, 2008). When cooked slowly and consumed with fat and moisture, these foods reduce digestive demand while delivering concentrated nourishment. Fats were not avoided in traditional postpartum nutrition; they were relied upon. Fat provides a dense energy source with relatively low digestive cost and supports hormonal signaling, tissue repair, and neurological stability (Innis, 2008). Vegetables were not eliminated, but they were prepared differently: raw, fibrous forms gave way to cooked, softened, and blended preparations, in which heat, time, and moisture reduced the digestive burden. This approach is specific to the early postpartum period and is not intended as a long-term dietary model. High-fiber foods remain

essential to long-term health; the distinction here is preparation method and timing, not permanent elimination. As digestive capacity recovers, dietary variety, including raw and fibrous vegetables, naturally and appropriately expands.

These food choices reflect a precise biological logic: when digestive capacity is limited, nourishment must be made more readily accessible. Reducing digestive load does not restrict nourishment. It protects it. When food arrives in a form the body can receive without strain, the nervous system settles, absorption improves, and reserves are preserved rather than borrowed. Only after the digestive load is reduced does optimization make sense. Only after absorption improves does intake matter. Postpartum nutrition does not begin with rules. It begins with relief.

Clarifying the Scope of This Perspective

This perspective is not advocating for dietary restriction as that term is commonly understood. It is not promoting deprivation, food moralization, or a permanent set of rules. Foods are not the problem. Timing and digestive cost are. In a clinical culture that equates dietary abundance with optimal nourishment, it has become difficult to distinguish restriction from responsiveness. Postpartum nutrition is often evaluated through this lens, where simplifying meals or favoring certain preparations is assumed to be regressive or unnecessarily limiting. This framing reflects a misunderstanding of underlying physiology. Responding to the body's digestive signals is better understood as a form of physiological regulation, not as restriction.

This perspective also does not normalize postpartum symptoms as inevitable or benign. Fatigue, digestive distress, mood instability, cognitive fog, immune suppression, and chronic depletion are commonly described as normal features of new motherhood. That framing reflects normalization of unmet physiological need, not biological design. When symptoms emerge, they are evidence that the body's requirements are not being met, not evidence that the postpartum body is fragile or failing. Finally, this is not an argument for permanent limitation. As digestion stabilizes and recovery progresses, variety naturally expands. Foods that challenge digestion in early postpartum are often well tolerated later. The sequence matters. What is supportive at one phase may be unnecessary, or insufficient, at another.

Conclusion

The question that has long framed postpartum nutrition (What should women eat?) is downstream of a more fundamental one: what happens to digestion after birth, and how must nutrition respond? When postpartum digestion is understood as a biologically adaptive, energy-conserving state, shaped by nervous system regulation, hormonal responsiveness, microbiome disruption, and cumulative reproductive demand, the rest follows logically. Nutrition must adapt not because the postpartum body is fragile or deficient, but because it is doing precisely what it was designed to do. The failure of modern postpartum nutritional guidance is not that women are under-informed. It is that physiology has been misread. Digestive signals are overridden rather than respected, symptoms are normalized rather than contextualized, and nourishment is evaluated by intake instead of absorption.

The concept of postpartum digestive insufficiency proposed here offers a framework for reorienting clinical and nutritional guidance. When nutrition responds to digestion rather than demanding that digestion respond to nutrition, restoration becomes possible. Not through excess or optimization, but through alignment with the physiological reality of the postpartum body. This framework is conceptual and integrative, drawing on multiple domains of physiology and clinical observation. Direct empirical studies specifically examining digestive capacity in postpartum populations remain limited, highlighting the need for targeted research in this area.

This perspective calls for a shift in how postpartum nutrition is assessed, taught, and supported in clinical practice. Future research is needed to establish validated markers of postpartum digestive recovery, to examine the relationship between digestive insufficiency and symptom burden across diverse populations, and to evaluate the clinical outcomes of digestibility-first nutritional interventions. The evidence base for postpartum physiology is growing. The framework for applying it to nutrition has not kept pace. That gap is where the work ahead begins.

References

Ajomiwe, N., Boland, M., Phongthai, S., Bagiyal, M., Singh, J., & Kaur, L. (2024). Protein nutrition: Understanding structure, digestibility, and bioavailability for optimal health. *Foods, 13*(11), 1771. https://doi.org/10.3390/foods13111771

Azami, M., Badfar, G., Khalighi, Z., Qasemi, P., Shohani, M., Soleymani, A., & Abbasalizadeh, S. (2019). The association between anemia and postpartum depression: A systematic review and meta-analysis. *Caspian Journal of Internal Medicine, 10*(2), 115–124. https://doi.org/10.22088/cjim.10.2.115

Bischoff, S. C., Barbara, G., Buurman, W., Ockhuizen, T., Schulzke, J.-D., Serino, M., Tilg, H., Watson, A., & Wells, J. M. (2014). Intestinal permeability—a new target for disease prevention and therapy. *BMC Gastroenterology, 14*, 189. https://doi.org/10.1186/s12876-014-0189-7

Bonaz, B., Bazin, T., & Pellissier, S. (2018). The vagus nerve at the interface of the microbiota-gut-brain axis. *Frontiers in Neuroscience, 12*, 49. https://doi.org/10.3389/fnins.2018.00049

Butte, N. F., & King, J. C. (2005). Energy requirements during pregnancy and lactation. *Public Health Nutrition, 8*(7A), 1010–1027. https://doi.org/10.1079/phn2005793

Carmody, R. N., Weintraub, G. S., & Wrangham, R. W. (2011). Energetic consequences of thermal and nonthermal food processing. *Proceedings of the National Academy of Sciences, 108*(48), 19199–19203. https://doi.org/10.1073/pnas.1112128108

Chauhan, G., & Tadi, P. (2022). Physiology, postpartum changes. In StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK555904/

Coquoz, A., Regli, D., & Stute, P. (2022). Impact of progesterone on the gastrointestinal tract: A comprehensive literature review. *Climacteric, 25*(4), 337–361. https://doi.org/10.1080/13697137.2022.2033203

Eunice Kennedy Shriver National Institute of Child Health and Human Development. (2017). How many calories does breastfeeding use? https://www.nichd.nih.gov/health/topics/breastfeeding/conditioninfo/calories

Filipowicz, D., Szczepanek-Parulska, E., Kłobus, M., Szymanowski, K., Chillon, T. S., Asaad, S., ... & Ruchała, M. (2022). Selenium status and supplementation effects in pregnancy—A study on mother–child pairs from a single-center cohort. *Nutrients*, *14*(15), 3082.

Fu, J., Zheng, Y., Gao, Y., & Xu, W. (2022). Dietary fiber intake and gut microbiota in human health. *Microorganisms, 10*(12), 2507. https://doi.org/10.3390/microorganisms10122507

Furness, J. B. (2012). The enteric nervous system and neurogastroenterology. *Nature Reviews Gastroenterology & Hepatology, 9*(5), 286–294. https://doi.org/10.1038/nrgastro.2012.32

Ghafarzadeh, M., Shakarami, A., Tarhani, F., & Yari, F. (2021). Evaluation of the prevalence of vitamin D deficiency in pregnant women and its correlation with neonatal vitamin D levels. *Clinical Nutrition Open Science, 36*, 91–99. https://doi.org/10.1016/j.nutos.2021.02.007

Hoekzema, E., Barba-Müller, E., Pozzobon, C., Picado, M., Lucco, F., García-García, D., Soliva, J. C., Tobeña, A., Desco, M., Crone, E. A., Ballesteros, A., Carmona, S., & Vilarroya, O. (2017). Pregnancy leads to long-lasting changes in human brain structure. *Nature Neuroscience, 20*(2), 287–296. https://doi.org/10.1038/nn.4458

Holm, C., Neef, V., & Pavord, S. (2025). Management of postpartum anemia. *Blood Transfusion, 23*(1), 47–49. https://doi.org/10.2450/BloodTransfus.924

Kim, P., Leckman, J. F., Mayes, L. C., Feldman, R., Wang, X., & Swain, J. E. (2010). The plasticity of human maternal brain: Longitudinal changes in brain anatomy during the early postpartum period. *Behavioral Neuroscience, 124*(5), 695–700. https://doi.org/10.1037/a0020884

King, J. C. (2000). Physiology of pregnancy and nutrient metabolism. *American Journal of Clinical Nutrition, 71*(5 Suppl), 1218S–1225S. https://doi.org/10.1093/ajcn/71.5.1218s

Konturek, S. J., Konturek, J. W., Pawlik, T., & Brzozowski, T. (2004). Brain-gut axis and its role in the control of food intake. *Journal of Physiology and Pharmacology, 55*(1 Pt 2), 137–154.

Koren, O., Goodrich, J. K., Cullender, T. C., Spor, A., Laitinen, K., Bäckhed, H. K., Gonzalez, A., Werner, J. J., Angenent, L. T., Knight, R., Bäckhed, F., Isolauri, E., Salminen, S., & Ley, R. E. (2012). Host remodeling of the gut microbiome and metabolic changes during pregnancy. *Cell, 150*(3), 470–480. https://doi.org/10.1016/j.cell.2012.07.008

Liu, H., Yang, G., & Wang, H. (2024). Oxytocin/oxytocin receptor signalling in the gastrointestinal system: Mechanisms and therapeutic potential. *International Journal of Molecular Sciences, 25*(20), 10935. https://doi.org/10.3390/ijms252010935

López-Vicchi, F., De Winne, C., Brie, B., Sorianello, E., Ladyman, S. R., & Becu-Villalobos, D. (2020). Metabolic functions of prolactin: Physiological and pathological aspects. *Journal of Neuroendocrinology, 32*(11), e12888. https://doi.org/10.1111/jne.12888

Mayer, E. A. (2000). The neurobiology of stress and gastrointestinal disease. *Gut, 47*(6), 861–869. https://doi.org/10.1136/gut.47.6.861

McEwen, B. S. (1998). Stress, adaptation, and disease: Allostasis and allostatic load. Annals of the New York Academy of Sciences, 840, 33–44. https://doi.org/10.1111/j.1749-6632.1998.tb09546.x

McEwen, B. S., & Wingfield, J. C. (2003). The concept of allostasis in biology and biomedicine. *Hormones and Behavior, 43*(1), 2–15. https://doi.org/10.1016/s0018-506x(02)00024-7

Mor, G., & Cardenas, I. (2010). The immune system in pregnancy: A unique complexity. *American Journal of Reproductive Immunology, 63*(6), 425–433. https://doi.org/10.1111/j.1600-0897.2010.00836.x

Nie, X., Xie, R., & Tuo, B. (2018). Effects of estrogen on the gastrointestinal tract. *Digestive Diseases and Sciences, 63*(3), 583–596. https://doi.org/10.1007/s10620-018-4939-1

Nordgren, T. M., Lyden, E., Anderson-Berry, A., & Hanson, C. (2017). Omega-3 fatty acid intake of pregnant women and women of childbearing age in the United States: Potential for deficiency? *Nutrients, 9*(3), 197. https://doi.org/10.3390/nu9030197

Soma-Pillay, P., Nelson-Piercy, C., Tolppanen, H., & Mebazaa, A. (2016). Physiological changes in pregnancy. *Cardiovascular Journal of Africa, 27*(2), 89–94. https://doi.org/10.5830/CVJA-2016-021

Sun, W. M., Houghton, L. A., Read, N. W., Grundy, D. G., & Johnson, A. G. (1988). Effect of meal temperature on gastric emptying of liquids in man. *Gut, 29*(3), 302–305. https://doi.org/10.1136/gut.29.3.302

Swain, J. E. (2011). The human parental brain: In vivo neuroimaging. *Progress in Neuropsychopharmacology and Biological Psychiatry, 35*(5), 1242–1254. https://doi.org/10.1016/j.pnpbp.2010.10.017

Taché, Y., Martinez, V., Million, M., & Wang, L. (2001). Stress and the gastrointestinal tract III: Stress-related alterations of gut motor function: Role of brain corticotropin-releasing factor receptors. *American Journal of Physiology—Gastrointestinal and Liver Physiology, 280*(2), G173–G177. https://doi.org/10.1152/ajpgi.2001.280.2.G173

Uvnas-Moberg, K., & Petersson, M. (2005). Oxytocin, a mediator of anti-stress, well-being, social interaction, growth and healing. *Zeitschrift für Psychosomatische Medizin und Psychotherapie, 51*(1), 57–80. https://doi.org/10.13109/zptm.2005.51.1.57

Woolf, P. D. (1992). Hormonal responses to trauma. *Critical Care Medicine, 20*(2), 216–226. https://doi.org/10.1097/00003246-199202000-00011