



# WOMEN'S HEALTH REPORT

A TWICE-YEARLY PUBLICATION OF WOMEN'S HEALTH DIETETIC PRACTICE GROUP • FALL 2021

## Prenatal Use of Probiotics

By Jenni Carvalho-Salemi, MPH, RDN, CSP, LD, CNSC

### Introduction

Scientific understanding of the intestinal microbiome and the role that it plays in maternal and child health outcomes has expanded in recent decades.

Emerging evidence demonstrates that dysbiosis, defined as an “imbalance in the composition and metabolic capacity” of the microbiome, is associated with short and long-term health outcomes for the neonate.<sup>1,2</sup> Dysbiosis in early life is associated with acute infection, such as necrotizing enterocolitis (NEC), as well as increased risk of long-term noncommunicable diseases such as diabetes, obesity, atopic and allergic diseases, asthma, gastrointestinal disorders, inflammatory bowel disease, and autism spectrum disorders.<sup>2,3</sup>

While these conditions have complex and multifactorial etiologies, including genetic and nonmodifiable factors, it has been suggested that correcting dysbiosis during the perinatal period could potentially modulate the presentation or severity of such pathologies.<sup>2,3</sup> This article aims to provide a concise synopsis as to the efficacy and safety of probiotic use during the perinatal period, defined here as pregnancy and up to one year postpartum.<sup>4</sup>

### Probiotic Use During Pregnancy

Maternal factors, including nutrition, antibiotic use, diabetes, and BMI have been linked to the developmental



programming of disease risk during the gestational period.<sup>2</sup> The infant gut microbiota is influenced by prenatal factors, although research as to whether colonization occurs in utero is inconclusive.<sup>3,5-7</sup> Regardless, current evidence does suggest that microbial metabolites derived from the maternal microbiome influence fetal signaling pathways which can predispose the offspring to preterm birth or disease risk.<sup>5-7</sup> Furthermore, probiotics administered to the mother during pregnancy may influence the composition of live organisms in her colostrum.<sup>8</sup>

Clinical research on the efficacy of probiotic use in pregnancy is ongoing and condition-specific. Limited evidence

suggests that probiotics may improve glucose and lipid metabolism, as well as anti-inflammatory capacity for women with diet-controlled gestational diabetes.<sup>9</sup> However, heterogeneity in strain selection and study design hinders conclusive review.<sup>9</sup> Specificity of strain designation is essential as different strains of the same species do not necessarily confer the same benefit. A recent meta-analysis concluded that oral administration of mixed strains of *Lactobacillus* and *Bifidobacterium* to pregnant mothers effectively reduced the risk of IgE-associated atopic dermatitis in children under the age of three.<sup>10</sup>

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# Women's Health

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## FROM THE CHAIR

LEE CROSBY, RD

### A New Member Year of Women's Health Opportunities



Thank you for being part of the only practice group dedicated to serving women and their unique nutrition needs. I'm humbled by the wealth of knowledge and experience

housed in the Women's Health DPG, and it's our mission to empower you to be the most valued source of nutrition expertise in women's health throughout the lifespan.

As a group, we are more than 950 members strong. And it's an exciting year to be a member! We're planning leading-edge continuing education webinars, we have five student partners creating educational videos with diverse leaders in the field, and we're advocating for women's health. We've got more ways than ever for members to get engaged—and shine. For more info on how to get involved, email me at [chair@womenshealthdpg.org](mailto:chair@womenshealthdpg.org) or contact our membership team at [membership@womenshealthdpg.org](mailto:membership@womenshealthdpg.org).

### To get the most from your membership:

- Get answers on the discussion board: Need expert advice on a clinical question? Can't find a resource? Post your question to get the answers on topics like PCOS, endometriosis, fertility, pregnancy, lactation, menopause, chronic disease, and more. Limited to members; sign in to access the board.
- Check out our e-blasts: coming to your inbox on a convenient, once-a-month schedule.
- Let us know what you think on [Facebook](#), [Pinterest](#), [Instagram](#), and [Twitter](#).

### Join us at FNCE® 2021

We hope you'll join us for two special events at FNCE®:

- **Women's Health Spotlight Session: Averting Alzheimer's: Nutrition Implications for Women.** Alzheimer's disease disproportionately affects women—and not just because women live longer. Join us to learn how hormones, lifestyle, and environment can place women at risk—and how nutrition can help.
- **Destress and Refresh: Women's Health Relax and Mingle Event.** You're invited to unwind with us! Enjoy 15 minutes of dynamic meditation and laughter yoga (!), led by certified yoga instructor and dietitian Donna Bernstein, followed by time to get to know fellow members in small breakout rooms. Attendees will also be entered to win a \$100 Amazon gift card!
- **WHDPG Attendee Lounge Takeover:** join this event by WHDPG Executive Committee members and take the opportunity to connect with other FNCE® attendees and explore resources and practice areas. Monday, October 18, 9-10 am CST.

**REGISTER NOW**

Finally, a thank you to everyone who gives so generously of their time on the executive committee—you keep this DPG running!

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**The Women's Health Report** (ISSN-3233) is an online twice-yearly publication of the Women's Health Dietetic Practice Group (WH DPG) of the Academy of Nutrition and Dietetics. The WH Report features articles, as well as information on programs, materials, positions, and products for use of its readers. News of members, book reviews, announcements of future meetings, requests for information, or other items of interest to women and reproductive nutrition dietetics practitioners should be sent to the Publications Editor at [publications@womenshealthdpg.org](mailto:publications@womenshealthdpg.org).

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## FROM THE EDITOR



You might be wondering what gut health has to do with women's health nutrition and why we chose this theme. As we learn more about the microbiome, we have learned that

it touches almost every aspect of health, particularly those related to women's health. For example, women are more likely to be diagnosed with Irritable Bowel Disease (IBS)<sup>1</sup>, SIBO<sup>2</sup> and IBD<sup>3</sup>, all of which are intimately related to our microbiome and how it can become dysfunctional.

In addition to these diseases affecting more women than men, emerging research suggests that women may benefit from probiotics in certain stages of life such as pregnancy and the postpartum period, as is being discussed in our feature article by Jenni Carvalho-Salemi, MPH, RDN, CSP, LD, CNSC.

Women are also far more likely to be diagnosed with osteoporosis - how is this relevant? As our featured writer Nicole Stefanow, MS, RDN will enlighten you, new research shows that bone health and gut health are intimately related.

As dietitians, we can't ignore the ways in which the microbiome is relevant to our practice. Not only do we now have good evidence that different dietary patterns affect the microbiome<sup>4</sup>, we also are beginning to understand the ways in which the diversity of the microbiome may be related to specific conditions. Women (and genetically female people) with PCOS and endometriosis have been shown to have altered microbiomes compared to their counterparts.<sup>5,6</sup> This usually means they are less diverse. Therefore, healing or diversifying the microbiome may play a role in the improvement of these conditions.

We are beginning to understand that microbiome diversity may be as important a health indicator as any other vital sign. When the gut is not diverse, we

JEANI HUNT-GIBBON, MS, RD, CD

begin to see dysfunction, food intolerance and disease. It is important for us to follow the research as it emerges in order to counsel our clients in the best ways to take care of their guts.

For now, we do know that a healthy combination of prebiotics (mostly consisting of high fiber foods) and potentially probiotics can help to diversify the gut microbiome,<sup>7</sup> and this may help in many aspects of health, such as inflammation, immune response, mental health and of course, gastrointestinal health.

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To date, published meta-analyses have not found robust evidence to support probiotic use for reducing risk of preterm birth, gestational diabetes, preterm premature rupture of the membranes, nor small or large for gestational age.<sup>6, 11</sup>

## Probiotic Use During Early Infancy

The colonization of the newborn intestinal microbiome is influenced by an array of postnatal factors starting with the mode of delivery.<sup>3, 5, 6</sup> It has been hypothesized that cesarean delivery, in precluding exposure to maternal microbiota during birth, leads to dysbiosis and potentially predisposes the neonate to higher risk of asthma, autoimmune conditions, and allergic disease. In fact, current evidence demonstrates a distinction in the intestinal microbiomes of neonates born via cesarean delivery as compared to those born vaginally. Nevertheless, its causal relation to poor health consequences has not been proven due to multiple confounders including maternal pre-pregnancy BMI, antibiotic exposure, gestational age at birth, and breastfeeding duration.<sup>12</sup> In other words, mode of delivery may be a proxy or mediating covariate and not an independent risk factor.<sup>13</sup>

Nevertheless, the concern—among health care providers and parents—for cesarean-related dysbiosis has resulted in practices such as vaginal seeding in an effort to restore the neonatal microbiome. Vaginal seeding of cesarean-born infants is the practice of inoculating a cotton gauze with maternal vaginal flora to the mouth, nose, or skin of the newborn. The practice is controversial and has not been endorsed by the American College of Obstetricians and Gynecologists (ACOG) outside the context of IRB-approved research due to concern for neonatal infection.<sup>14</sup> A deep dive into this topic is outside the scope of this article; however, it is in this context that probiotics have been suggested as a safer method for correcting neonatal dysbiosis.<sup>12</sup>

Indeed, possibly the most robust research in support of probiotic use in the perinatal period arose from its use in neonatal intensive care units (NICUs). In 2020, guidelines published by the American Gastroenterology Association suggested the use of specific probiotic strains or combination of strains for the prevention of necrotizing enterocolitis (NEC) in premature neonates and reduction of all-cause mortality in infants less than 37 weeks gestational age and low birth weight. As stated in their clinical practice guidelines, “NEC is the most important gastrointestinal emergency among preterm neonates, characterized by mucosal or even deeper intestinal necrosis of the bowel with common long-term sequelae, including short bowel syndrome and impaired neurodevelopment. Microbiota differs in infants with NEC compared to healthy infants providing a rationale for microbiota-oriented treatments.”<sup>15</sup> A recent network meta-analysis published in *Pediatrics* which included 45 trials and over twelve thousand infants further clarified optimal usage, reporting that probiotic formulations with *Bifidobacterium* plus *Lactobacillus* strains were associated with lower rates of mortality (RR 0.56; 95% CI 0.34–0.84) and NEC morbidity (RR 0.47; 95% CI 0.27–0.79) than those of the placebo,

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and Lactobacillus plus prebiotic was associated with lower rates of NEC morbidity (RR 0.06; 95% CI 0.01–0.41) than those of the placebo.<sup>16</sup>

### Safety

Probiotics are defined as “live microorganisms that, when administered in adequate amounts, confer a health benefit on the host”.<sup>17</sup> Historically, probiotics have a good safety profile. Yet administration to pregnant women and neonates is not without risk due to the vulnerability of these populations and inconsistent quality manufacturing processes across brands.<sup>17-19</sup> As pointed out by Jackson et al., “manufacturers of probiotic products range from Fortune 100 companies to small startups, from companies committed to highest quality to those willing to take shortcuts.” With few exceptions, probiotic ingredients regulated as dietary supplements are not approved by the Food and Drug Administration (FDA) to treat, cure, or prevent any disease. Dietitians should familiarize themselves with clinician resources, best practice guidelines for probiotic use and labeling, as well as existing third party certifications to assist consumers in identifying high-quality brands.<sup>17, 20</sup>

If a probiotic use has been deemed

beneficial, a product should be judiciously selected based on a critical review of the scientific evidence for strain-specific benefits in pregnant women and/or neonates. Probiotics is an umbrella term, but maternal-fetal transferability and benefits to the newborn are strain and disease specific.<sup>8, 16, 19</sup> Furthermore, microbial strains may neutralize or compete with one another, so multi-strain products should be preferred only when evidence has demonstrated a synergistic effect when combined.<sup>21</sup> Recommendations should be based on the strain and dose found to be efficacious in clinical studies. Lastly, population specificity matters. For example, while recommended in premature infants, more evidence is needed on safety of probiotic supplementation in extremely preterm and low birth weight infants (GA<27 weeks or a birth weight<1000g).<sup>16</sup>

Registered Dietitian Nutritionists (RDNs) have the ethical responsibility to practice using evidence-based medicine and promote high standards of professional practice, accepting the obligation to protect clients, the public, and the profession.<sup>22</sup> Given the vulnerability of these populations, it is important to encourage expectant mothers to openly communicate with their gynecologist, pediatrician, midwife, and trusted providers as to the appropriateness of perinatal probiotic use in their individual situation.

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# QUICK-AND-EASY GUIDE TO YOUR WH DPG RESOURCES

## WOMEN'S HEALTH DPG WEBSITE:

Access webinars, past newsletter issues, the latest updates, and more. Logging in is easy: Your username is your email address and your password is your Academy Number. <http://www.womenshealthdpg.org>

## SOCIAL MEDIA:

Connect with your women's health colleagues:

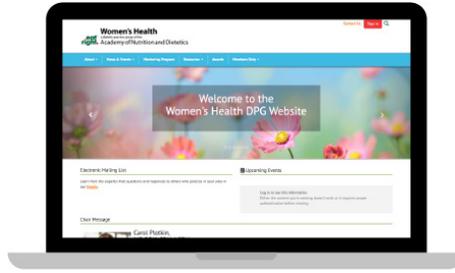
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Apply for Excellence in Practice in Women's Health, Emerging Professional in Women's Health, and Outstanding Student in Women's Health: <http://womenshealthdpg.org/members-awards/>



## NEW DISCUSSION BOARD BENEFIT:

*Melissa Nelson, WH Website/EML Coordinator*

Need expert advice on a pressing clinical question? Looking for a resource but don't know where to find it? Want to connect with other women's health professionals and students? Post your question to our [discussion board](#) and get the answers you need from dietitians specializing in PCOS,

endometriosis, fertility, pregnancy, lactation, menopause, chronic disease, and more.

## NEWSLETTER ARCHIVE:

Read about women's health topics in the newsletter archive: <http://womenshealthdpg.org/newsletters/>

## E-BLASTS:

Receive updates with the latest news and resources from the WH DPG.

## WEBINARS:

Earn FREE continuing education with webinars in women's health nutrition.

To watch recordings of past webinars or register for an upcoming webinar, please visit <http://womenshealthdpg.org/webinars/>.

## WH DPG UPDATES

### LEGISLATIVE

A lot of women's health issues are coming down the pipeline. Be sure to support the Academy and our profession by completing the following action alerts:

#### The Build Back Better Act

The big bill going through Congress right now has many provisions relevant to women's health. The Build Back Better Act would:

- Increase access to free healthy school meals for nearly 9 million more children
- Expand the critical Summer Electronic Benefit Transfer program to prevent hunger while school is out
- Invest in school kitchen equipment and nutrition education
- Support senior nutrition

infrastructure and nutrition services for Older Americans Act congregate and home-delivered meals programs

- Significantly narrow the health insurance coverage gap, extend Medicaid coverage for postpartum women and enact other provisions of the Black Maternal Health Omnibus Act
- Invest in the public health workforce and infrastructure, including pandemic preparedness.

[Complete the action alert here.](#)

#### Increase WIC's Cash Value Benefit

For almost 15 years, WIC's Cash Value Benefit (CVB) has ensured that pregnant women, children and postpartum mothers have more access to fruits and vegetables. During the COVID-19 pandemic, Congress authorized the increase of the CVB from \$9 per child and \$11 per mother

to \$35 per child and adult. This increase has bolstered the availability of fruits and vegetables for WIC participants. However, it is set to expire on September 30. Without action from Congress, 4.7 million children, pregnant women and postpartum mothers will experience a significant decrease in access to fruits and vegetables. [Take Action today here.](#)

#### The PUMP Act

Nearly 9 million women of childbearing age are not covered by the Break Time for Nursing Mothers law, the federal provision that requires break time and a private space for breastfeeding employees to pump during the workday.

Passage of the Providing Urgent Maternal Protections for Nursing Mothers Act (H.R. 3110), or PUMP Act, would provide lactating, working parents with the break time and space to express milk. [More info here.](#)



# TRENDSETTERS & TRAILBLAZERS



**Sara Jones**, the lead registered dietitian in the Upstate Region of the South Carolina Department of Health & Environmental Control, was

recently accepted to the Emerging Nutrition Leaders in Maternal (ENL) and Child Health Training Institute (MCH). The Training Institute is a free, 12-month program sponsored by the MCH Nutrition Training Programs at the Arizona State University, University of Alabama, Birmingham, Baylor College of Medicine, University of Minnesota, Tulane University, the University of Tennessee Knoxville, and the Health Resources and Services Administration's Maternal and Child Health Bureau. The ENL MCH Training Institute is designed to train registered dietitians, with three to ten years of experience in public health nutrition, who are emerging nutrition leaders.

"I am excited for this unique opportunity to devote the next 12 months to developing my leadership skills within MCH nutrition to better serve South Carolinians," Sara said. "I am in a special position serving as the primary advisor on nutrition for the state's regional public health department as well as serving on the state's dietetic professional board of directors. These positions

allow me to have an impactful presence on maternal and child health in South Carolina and this training will help me to improve my efforts." The May 2021- May 2022 virtual cohort consists of twelve dietitians from around the country, working on leadership assessment, skills and public policy. "I plan to utilize this new knowledge and experience to be a more efficient and effective leader by advocating for the SC DHEC WIC Program, the dietetics field, and maternal and child health in South Carolina," Sara said.



Member **Mara Vitolins, DrPH** recently won the prestigious Academy Excellence in Practice: Research Award! This award recognizes

an outstanding registered dietitian nutritionist who has demonstrated excellence and leadership in this specific area of practice. Vitolins is a professor of Epidemiology at Wake Forest School of Medicine and has produced extensive research on varied nutrition and epidemiological topics such as cancer survivorship, weight management in vulnerable populations and food insecurity.

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## Want to be included in Trendsetters & Trailblazers?

Send your latest books or accomplishments related to women's health to [publications@womenshealthdpg.org](mailto:publications@womenshealthdpg.org)!

## Let's Beat Breast Cancer 2021 Campaign

Breast cancer is one of the most common types of cancer and the second leading cause of cancer death among women in the United States. The Let's Beat Breast Cancer campaign aims to raise awareness on how women can reduce their risk of breast cancer through the following four components: eating a healthful diet, featuring plant-based foods; exercising regularly; limiting alcohol consumption; and aiming to maintain a healthy weight. Learn more at [LetsBeatBreastCancer.org](http://LetsBeatBreastCancer.org) or try the four-week challenge. The lead dietitian on the campaign is our very own Lee Crosby.

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**Martha Huizar, MS, RDN, CLC, CCHC**, joined the Academy staff as a DPG Manager. She will be supporting WH DPG as our DPG Manager. Martha is a pragmatic and

compassionate registered dietitian nutritionist with experience fostering a culture of avid learning and collaboration toward common goals. She has 7 years of experience with the Arizona Academy of Nutrition and Dietetics serving as a Treasurer and Awards Coordinator and has also volunteered her time to other akin organizations such as the University of North Florida RD Mentorship Program, The Community Food Bank, The National Head Start Association, The University of Arizona, Tucson Medical Center, and Stand Up for Kids. Her work experience includes Head Start and The University of Arizona and is currently an adjunct clinical instructor at the University of Illinois at Chicago (UIC) and a small business owner performing nutrition consulting and growing vegetables at a micro-scale. At UIC, she teaches health communication, various health literacies, and nutrition to graduate students in healthcare professions.



Member **Patti Francis** recently started a new virtual nutrition coaching business specializing in fertility nutrition in South Carolina. Patti primarily works with

women who wish to conceive naturally. More info on Instagram [@pattifrancis](#).  
dietitian

## WH DPG UPDATES

We're excited to announce that we've identified our Student Partners for the year. They will be working with us on our Diversity Mini Grant Activities such as social media awareness campaigns.

- **Taylor Lowe:** University of Georgia, MS Nutrition and Foods
- **Genesis Pierre:** Concordia College, Moorhead, Minnesota; Combined Masters in Nutritional Science and Dietetic Internship with an emphasis in Leadership
- **Natalia Smith:** University of California, Berkeley, MPH, Public Health and Nutrition
- **Zenab Ojibe:** University of California, Berkeley, MPH, Public Health and Nutrition

## FNCE®

Join us for the Women's Health Spotlight Session at FNCE®! [Averting Alzheimer's: Nutrition Implications for Women](#)

Alzheimer's disease disproportionately affects women—and not just because women live longer. Due to a complex interplay of hormones, lifestyle, and environmental variables, two-thirds of those with Alzheimer's are female, as are most caregivers. Co-presented by longtime Women's Health DPG member Christy Tangney, PhD, FACN, CNS, co-creator of the MIND diet and primary investigator on the Chicagoland US-POINT-ER trial, and Ayesha Sherzai, MD, MAS, co-director of the Alzheimer's Prevention Program at Loma Linda University, this session will explain how Alzheimer's disease develops, gender and racial disparities, and nutrition's role in prevention and management. Research on diet and dementia from cohort studies and clinical trials will also be presented. Specific nutrition interventions to reduce Alzheimer's disease risk or delay progression will be discussed, along with how nutrition professionals can help mitigate this silent women's health crisis.

- Monday, October 18  
2:30 PM – 3:30 PM (Central Time)
- [Join here](#)

## HOD UPDATES

House of Delegates Update Fall 2021

The House of Delegates recently voted on updates to the Academy Bylaws. There were two motions that were considered.

### Motion 1 Article XV Amendments: Methods

Bylaws may be amended by a two-thirds (2/3) vote of the membership of the House of Delegates. Motion carried: 96 supported/13 opposed

### Motion 2 Article XV Amendments: Notice

The proposed amendment(s) must be provided to the Academy membership at least (45) days prior to a vote of the House of Delegates Motion rejected: 24 supported/ 76 opposed

As a result, "to the Academy membership" will not be added to the bylaws.



# The Psychology of Food Cravings

By Danielle Basye, RDN, LD, RYT, Registered Dietitian, Center for Change, Boise, Idaho, Graduate Student, MS in Nutrition, Idaho State University

Food cravings are multifaceted experiences, influenced by biological hunger, cognitive factors, human behavior, cultural beliefs, habituation responses, physiological responses, and the environment.<sup>1,2,3,4,5</sup> Some individuals fear that having access to or consuming craved foods will lead to weight gain, decrease their intake of nutrient-dense foods, or negatively affect their health.<sup>1,5</sup> Indeed, research has found that food cravings may be a barrier to developing the diverse eating pattern needed to support optimal health.<sup>3</sup> Oliveira et al. found higher levels of restraint and more negative attitudes towards carbohydrates among those with binge eating disorders.<sup>6</sup> Of note, the authors did not specify if those individuals had clinically diagnosed binge eating disorders.

Hunger and cravings are a normal part of the physiology of the human eating experience.<sup>2</sup> Biological hunger, characterized by the deprivation of the biological need for energy, influences eating behaviors.<sup>7</sup> Biological hunger and food preferences appear to be a hedonic (emotional) response to specific foods.<sup>1,2,8</sup> Honoring a food craving is a cue reactivity response that induces a reward/pleasure reaction in the brain.<sup>1</sup>

Registered dietitian nutritionists (RDNs) and other health professionals often approach cravings through a traditional weight-centric, restrictive model. To investigate the efficacy of this approach for clients who report high frequency, duration, and intensity of food cravings, a search of the recent (2018-2021) literature was conducted. English-language, primary and secondary, peer-reviewed articles were included. Animal and cell studies were excluded. Three articles emerged that offer current insights into the psychology of food cravings.

## Findings of Recent Studies on Food Cravings

In a 2020 review of studies investigating food deprivation, all but one of 17 (94%) articles concluded that selective food restriction, a restriction of one particular food, increased the overall craving of that one food item.<sup>4</sup> Many of the studies included limiting carbohydrate-dense foods (e.g., bread, rice, chocolate) and/or overall intake of calories. Thus, restricting or depriving oneself of a particular food may result in cravings for that food. Dieting and other restricted eating patterns, for example, were associated with increased cravings for taboo foods. Weight loss studies, however, demonstrate that restricting calories can inhibit food cravings. Meule suggests that this contradictory finding may be related to substituting avoided foods with more nutrient-dense choices.<sup>4</sup> The complexity of the association between dieting and food cravings is, thus, revealed. Of note, the author also concludes that, except for rare instances, food cravings are not associated with nutrient and/or energy deficiencies. Instead, the review found that cravings are a conditioned response related to associations between certain foods and internal or external cues.<sup>4</sup>

Schyns et al. studied the habituation response among adolescents (n = 41, 12-18 years) in the absence of physical hunger.<sup>9</sup> The habituation response refers to the phenomenon that repeated exposure to a specific food can reduce the desire for that item. Participants were divided into exposure and control groups. Researchers encouraged individuals in the exposure group to smell, touch, lick, and imagine eating their four favorite foods as well as chocolate mousse (as a standard exposure food), but not to eat them. Controls received lifestyle counseling.

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Compared to the control group, participants in the exposure group experienced fewer food cravings with repeated exposure and permission to consume preferred foods. The authors reported that these behaviors occurred with foods beyond those employed in the study.<sup>9</sup>

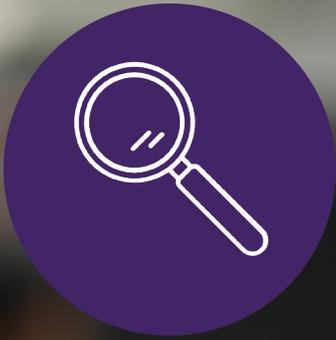
A second study by Schyns et al. further supports the habituation response to food.<sup>10</sup> The researchers assessed the effect of food exposure on weight loss outcomes among overweight women. They split participants (n=45, motivated to lose weight, mean BMI 33.7 kg/m<sup>2</sup>) into two groups: food exposure and control. Participants in the food exposure group identified their favorite food and a preferred item from a food list. They were then exposed to these foods in a variety of contexts. The intervention group decreased their frequency of binge eating and snacking of the exposure foods. The authors also found that over time, this group reported fewer cravings and a reduced desire to eat the exposure foods.<sup>10</sup>

### Translating Research into Clinical Practice

The findings of this review can aid RDNs working with individuals that report high frequency, duration, and intensity of food cravings. The evidence supports including craved foods in their meal plan and suggests that this approach may help control those cravings. As part of nutrition counseling, it is advisable to help patients understand the complexities of the association between dieting and cravings. The recent research suggests that this liberalization of dietary choices may also help decrease guilt around socially “taboo” foods. A nutrition intervention incorporating a variety of foods into a well-rounded diet meeting overall energy and macronutrient needs is reinforced. For individuals that report high frequency, duration, and intensity of food cravings, the inclusion of strategies for incorporating craved foods into that well-rounded diet is recommended.

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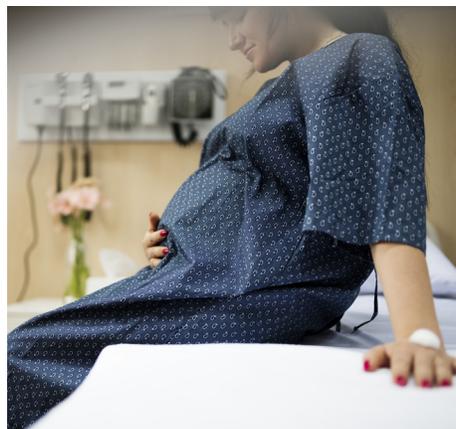
# RESEARCH ROUNDUP

## WOMEN'S HEALTH

- A new study has found that women with gestational diabetes are not given enough support to make significant diet and lifestyle changes needed to manage the condition. This was particularly true for lower income women and women of color. Women in general did lower caloric intake and carbohydrate intake a bit, but they did not increase exercise. *Journal of the Academy of Nutrition and Dietetics*

## PREGNANCY

- Maternal overweight BMI and obese BMI were associated with increased risk of offspring developing colorectal cancer later in life in a recent observational study. Colorectal cancer risk was more than double compared to those born of mothers with a normal or underweight BMI. *Gut*
- A study in JAMA found that prenatal exposure to both drinking and smoking during the second and third trimesters was significantly associated with increased risk of late stillbirth. Risk of late stillbirth was increased by 287% for those who smoked and drank after the first trimester compared to those who didn't or those who quit smoking before the end of the first trimester. *JAMA*



## MENOPAUSE

- A study by well-known vegan doctor Neal Barnard found that menopausal women who were randomly assigned to a vegan diet with half a cup of soybeans daily had a significant reduction in hot flashes compared to a control group. Several women in the intervention group had their hot flashes completely alleviated. Researchers believed that the isoflavones in soy contributed to the production of equol, a phytoestrogen, which has been shown in previous studies to help with hot flashes. *Menopause*

## POLYCYSTIC OVARY SYNDROME (PCOS)

- A study examining overweight women with PCOS and vitamin D deficiency found that treatment with a large dose of D3 (50,000 IU) over 12 weeks significantly improved symptoms. In particular, testosterone levels were lowered and hirsutism decreased. In addition fertility parameters were improved, such as increased menstrual regularity, ovarian volume and follicular number. *Clinical Nutrition*
- Researchers examining serum omega-3 fats and omega-3 intake found a significant inverse association with PCOS diagnosis and symptoms. Specifically, all types of omega-3s in serum were associated with lower risk of PCOS, whereas only consumption of EPA and DHA were associated with a lower risk of PCOS. Both were associated with lower risk of high BMI, high insulin levels, high testosterone levels and CRP levels. Researchers believe the mechanism of action could be a reduction in weight gain or inflammation. *The British Journal of Nutrition*



# Emerging Research On The Gut-Bone Connection

By Nicole Stefanow, MS, RDN

## Bone Health: A Women's Health Issue

Our skeletal system is an ever-changing landscape, being built up and broken down at all times throughout our lives. Osteoblast cells, our skeletal architects, are continuously creating a complex bone matrix from protein and collagen and reinforcing it with calcium and other mineral deposits. Meanwhile, osteoclast cells, our demolition crew, are breaking down and reabsorbing older bones to make room for new growth and repairs. A disproportion in this balanced process can result in bone diseases, such as osteopenia and osteoporosis.<sup>1</sup> By the age of 30, women's bones begin to break down faster than new bone can be created and, by age 50, the risk of bone disease increases exponentially. In fact, it's estimated that more than 50% of women over the age of 50 in the U.S. have low bone mass density.<sup>2</sup>



## The Gut-Bone Connection

According to a systematic review of recent research, "the appearance of bone diseases is often accompanied by significant changes to the gut microbiota"<sup>3</sup> and a growing body of research is investigating the effects of gut microbiome on bone health. A 2017

study showed that changes to intestinal health had an effect on the health of distal bones, suggesting the possibility of a gut-bone axis.<sup>4</sup>

"The more we learn about the gut microbiome, the more we realize how much it affects every aspect of our health, including our bones." says Grace Clark-Hibbs, MDA, RDN, a registered dietitian and gut health expert in Portland, OR.

## The Potential Mechanisms Linking the Two

The gut microbiome can indirectly regulate the delicate balance between bone formation and absorption through its effects on the immune system, its part in bone marrow inflammatory response, and its role in the regulation of intestinal hormones.<sup>3</sup>

One of the gut microbiome's most impactful mechanisms related to bone health is its ability to increase calcium absorption in the small intestines.<sup>5</sup> Prebiotic soluble fiber is metabolized and fermented by gut microbes and turned into short chain fatty acids (SCFAs). Research suggests that SCFAs may also help regulate osteoclast and osteoblast activity resulting in maintained or increased bone mass.<sup>6</sup>

## Supporting a Healthy Microbiome for Bone Health

A healthy gut microbiome can be supported through dietary and supplementary interventions. Increased vitamin D, calcium, and bioactive plant compounds called phytoestrogens are noted as important nutrients for gut-bone health.<sup>3</sup> Phytoestrogens must be metabolized by gut bacteria before being absorbed into the body. Some

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research supports that diets rich in phytoestrogens, such as soy isoflavones, may have bone-sparing effects in the long term due to their ability to increase osteoblast activity and reduce bone reabsorption; that being said, other studies have not found a significant connection, and more research is warranted to solidify these findings.<sup>7</sup> Prebiotic foods can also help support intestinal health. In addition to enhanced mineral absorption through SCFAs, prebiotics can help increase incretins and serotonin hormones which are also known to help regulate bone density.<sup>3</sup>

Probiotics may help diversity the gut microbiome. Researchers have found that the use of probiotics resulted in “decreased inflammation of the gut and bone, improved gut permeability and prevented bone loss in animal models.”<sup>3</sup>

Recent research also supports that diets high in fruits and vegetables, such as the Mediterranean & DASH diets are protective of bone health whereas diets high in refined carbohydrates such as the typical Western diet have an inverse relationship with bone health.<sup>3</sup>

### Gut Health: A Women’s Health Issue

Helping our female patients support their gut microbiome can provide a host of benefits for overall health. Hormone balance during menopause is regulated by the metabolism of

estrogen by estrobolome, a collection of microbes found in the gut.<sup>8</sup> As estrogen decreases during menopause, the risk of developing bone diseases like osteoporosis increases.<sup>9</sup> Maintaining proper estrogen levels with the help of estrobolome can help keep bones strong. “Promoting a diet that contains a wide range of fruits, vegetables, nuts, seeds, herbs, and spices is the best way to ensure the estrobolome is diverse and thriving,” says Clark-Hibbs.

Clark-Hibbs recommends building a healthy gut microbiome through the consumption of probiotics such as fermented foods, yogurt, and supplements. “Then encourage those microorganisms to flourish and grow by fueling them with prebiotics. The best way to do this is by eating a wide variety of prebiotic foods to ensure each type of microorganism is getting their preferred substrate.” She goes on to explain that prebiotics like inulin from foods like garlic, onions and asparagus, may also improve calcium absorption.

As you can imagine, the gut microbiome made up of trillions of microorganisms is complicated and, as such, much more research is needed in this area to investigate which strains of microbes positively affect bone health to provide guidance for recommendations for health professionals. However, research supports that a healthy gut microbiome can help promote overall health and, as dietitians, it’s exciting to be at the forefront of this research watching the relationship between these two areas of women’s health unfold.

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# BOOK REVIEW

## The Bloating Belly Whisperer

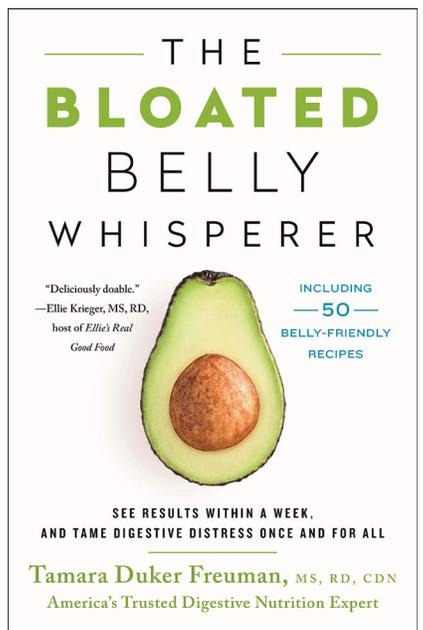
*Reviewed by Jordan Stachel*

Tamara Freuman is a registered dietitian who specializes in working with patients with gastrointestinal issues. She draws on her clinical experience as well as the literature in this practical guide to identifying and remedying the causes of bloating.

Freuman begins by sharing that bloating has a variety of causes. In order to discover the root cause of bloat, Freuman has readers complete a nine-question "Bloating Belly Whisperer Quiz." Depending on the answers, readers are directed to chapters on varying conditions including: gastroparesis, abdomino-phrenic dyssynergia (APD), classic indigestion, functional dyspepsia (FD), aerophagia, constipation, small intestinal bacterial overgrowth (SIBO), and carbohydrate intolerance. Freuman then discusses each of the conditions that can result in bloating and the intricacies of each.

For each condition, she covers the signs and symptoms, the type of bloating that occurs (yes, this varies quite a lot), how it is diagnosed and recommended treatments and nutrition therapy. This varies widely depending on the root cause of bloating. For example, soft meals that are low in fat are recommended for gastroparesis. Apparently, texture is really important here. Whereas, bloat that starts lower down in the intestines may require larger meals and a gradual increase in fiber.

After reviewing each condition, Freuman addresses specific diets, such as the GI Gentle Diet and the low-FODMAP diet, that may be useful to the reader depending on the type of bloating someone is experiencing. Of great value to RDNs, she also reviews a number of supplements that may be encountered in working with patients, taking a "less is more" approach and recommending those with the most evidence to support their use.



*The Bloating Belly Whisperer*  
By Tamara Duker Freuman, MS, RDN, CDN  
\$15.99 on Amazon

Overall, The Bloating Belly Whisperer is a comprehensive resource for individuals suffering from gastrointestinal issues or for those who may want information regarding various kinds of bloating. It is especially helpful as a clinician's guide for professionals who engage with patients on a regular basis who are experiencing GI concerns. While patient stories illustrate these conditions and their treatment, Freuman's information is supported by peer-reviewed research. The text is dense and uses a scientific vernacular and, for that reason, may not be advised for individuals with a very limited understanding of the sciences. Overall, this is a valuable resource for people looking to learn more about common digestive concerns and how to manage them.



# RECIPE

## Coconut Curry Chicken

Our very own Emma Fogt, MBA, MS, RDN, FAND owns the Biome Kitchen, a nutrition business dedicated to digestive health. She developed this family-friendly Coconut Curry Stir Fry to be low FODMAP, dairy free, gluten free and even vegetarian-friendly (just switch chicken for tofu). The recipe pairs well with a steaming bowl of white rice and kids and adults love it.

To make this recipe vegetarian/vegan simply swap the diced chicken with diced firm tofu. The tofu needs to be firm to be able to stir fry well.



### EQUIPMENT

- WOK
- MIXING BOWLS

### INGREDIENTS

- 14 OZ COCONUT MILK
- 2 TSP CURRY POWDER
- 1 TBS CORN STARCH
- 1 TBS BROWN SUGAR
- 1/2 TSP SEA SALT
- 3 TBS PEANUT OIL CANOLA OIL  
*MAY BE SUBSTITUTED FOR A PEANUT-FREE OPTION*
- 1 LB CHICKEN BREAST, DICED TOFU  
*MAY BE SUBSTITUTED HERE FOR A VEGETARIAN OPTION*
- 1 WHOLE RED BELL PEPPER, SLICED
- 1 LB GREEN BEANS, TOPPED AND TAILED
- 1 TBS GINGER, GRATED
- 1/4 CUP CASHEWS (OPTIONAL)  
WHOLE, SALTED CASHEWS, TOASTED
- 1/4 CUP FRESH BASIL; SLIVERED FOR GARNISH. *THE BASIL LEAVES CAN BE ROLLED AND CUT INTO SLIVERS OR "CHIFFONADE" THE BASIL*

### DIRECTIONS

1. Whisk together first 5 ingredients in a small bowl; set aside.
2. Heat wok over high heat until a few drops of water evaporate immediately. Swirl 2 tablespoons oil in pan to coat. (If using a nonstick skillet, heat oil over medium-high heat.) Add chicken, and cook 2 to 3 minutes on each side or until lightly browned. Remove the chicken from the pan; cover and keep warm.
3. Heat remaining 1 Tablespoon oil in wok over high heat (medium-high, if using a nonstick skillet). Add the bell pepper, green beans, and ginger; stir-fry 3 to 4 minutes.
4. Whisk reserved sauce mixture, and add to wok with the vegetables. Cook 1 minute or until sauce thickens. Stir in slivered basil and reserved chicken. Sprinkle with cashews; serve with hot cooked rice.

### NOTES

This recipe can become a vegetarian option by substituting diced firm tofu for the chicken. Sauté the tofu like the chicken in the oil in the Wok.

Serve this dish over a bed of steamed rice.

If you'd like to contribute a recipe relevant to women's health, please email us at [publications@womenshealthdpg.org](mailto:publications@womenshealthdpg.org). We're particularly looking for diverse cultural foods to feature in future issues.