

May 2019

## SCIENCE CONFERENCES OBSERVATIONS PRACTICE EVIDENCE



BSx

Bariatric Surgery

CV

Cardiovascular

BChg

Behaviour Change

DM

Diabetes

OB

Obesity

### Science

Effects of 4 low-calorie sweeteners & sucrose on body weight  
Ultra-processed diets & caloric intake/wt gain  
Technology-mediated wt loss intervention

CV

Probiotic supplementation & wt loss on MetSx in patients with CVD

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### Conferences

Summary notes from Annual Scientific Day on T1DM

**NEW in Upcoming:** 10<sup>th</sup> Learning Retreat on the Principles and Practice of Interdisciplinary Obesity Management

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## Observations

Glucose/lipid homeostasis & inflammation on keto diet  
Sex & ketosis on appetite  
Daily self-weighing & holiday wt gain  
PA & self-weighing on wt regain  
Role of protein leverage in obesity (as measured by BMI)  
Ultra-processed food & mortality  
Fat shaming

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Five-year outcomes of GBP in adolescents

CV

Energy-restricted MedDiet & exercise on wt loss & CV risk factors  
Ultra-processed food & CVD risk

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## Practice

Today's Fad Diets

DM

Insulin Glargine 300 U/mL vs 100 U/mL

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## Evidence

Omega-3 & -6 PUFAs & MetSx  
MedDiet & all-cause mortality  
Gestational wt gain & adverse maternal/infant outcomes  
Early antibiotic exposure & risk of childhood wt gain  
Effectiveness of nutrition specialists on pediatric wt mgmt

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Alteration of taste perception after bariatric surgery

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**Full Text Article**

**[A randomized controlled trial contrasting the effects of 4 low-calorie sweeteners and sucrose on body weight in adults with overweight or obesity.](#)**

[defined as BMI 25-40] *The American Journal of Clinical Nutrition* 109(5):1288-1301. In a parallel-arm design, 154 participants were randomly assigned to consume 1.25–1.75 L of beverage sweetened with sucrose ( $n = 39$ ), aspartame ( $n = 30$ ), saccharin ( $n = 29$ ), sucralose ( $n = 28$ ), or rebaudioside A (rebA) ( $n = 28$ ) daily for 12 wk. The beverages contained 400–560 kcal/d (sucrose treatments) or <5 kcal/d (low calorie sweeteners (LCS) treatments). The authors concluded Sucrose and saccharin consumption significantly increase body weight compared with aspartame, rebA, and sucralose, whereas weight change was directionally negative and lower for sucralose compared with saccharin, aspartame, and rebA consumption. LCSs should be categorized as distinct entities because of their differing effects on body weight.

**Full Text Article**

**[Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake.](#)** *Cell Metabolism* published online May 2019. This study

investigated whether ultra-processed foods affect energy intake in 20 weight-stable adults. Subjects were admitted to the NIH Clinical Center and randomized to receive either ultra-processed or unprocessed diets for 2 weeks immediately followed by the alternate diet for 2 weeks. Meals were designed to be matched for presented calories, energy density, macronutrients, sugar, sodium, and fiber. Subjects were instructed to consume as much or as little as desired. Energy intake was greater during the ultra-processed diet ( $508 \pm 106$  kcal/day;  $p = 0.0001$ ), with increased consumption of carbohydrate ( $280 \pm 54$  kcal/day;  $p < 0.0001$ ) and fat ( $230 \pm 53$  kcal/day;  $p = 0.0004$ ), but not protein ( $-2 \pm 12$  kcal/day;  $p = 0.85$ ). Weight changes were highly correlated with energy intake ( $r = 0.8$ ,  $p < 0.0001$ ), with participants gaining  $0.9 \pm 0.3$  kg ( $p = 0.009$ ) during the ultra-processed diet and losing  $0.9 \pm 0.3$  kg ( $p = 0.007$ ) during the unprocessed diet. Limiting consumption of ultra-processed foods may be an effective strategy for obesity prevention and treatment.

**DOC Network Note:** Read the [PEN@ Trending Analysis report](#) on this study. Read [Dr. Arya Sharma's comments](#) on this study – which includes this “There is however one caveat: based on the cost of ingredients obtained from a local supermarket, the weekly cost for ingredients to prepare 2,000 kcal/day of ultra-processed meals was estimated to be \$106 versus \$151 for the unprocessed meals. This would mean a food bill that is 50% higher for the average household. In addition, there is a time cost for meal preparation (and chewing) of the unprocessed food diet.”

**Full Text Article**

**[Behavioural intervention for weight loss maintenance versus standard weight advice in adults with obesity: A randomised controlled trial in the UK \(NULevel Trial\).](#)** *PLoS Med.* 2019 May

7;16(5):e1002793. This study examined the effectiveness and cost-effectiveness of a low-intensity technology-mediated behavioural intervention to support weight-loss maintenance (WLM) in 288 adults with obesity [as measured by BMI] after clinically significant weight loss ( $\geq 5\%$ ) compared to standard lifestyle advice. Participants were randomized to either standard lifestyle advice via newsletter (control arm) or a technology-mediated low-intensity behavioural WLM programme (intervention arm). The intervention comprised a single face-to-face goal-setting meeting, self-monitoring, and remote feedback on weight, diet, and physical activity via links embedded in short message service (SMS). All participants were provided with wirelessly connected weighing scales, but only participants in the intervention arm were instructed to weigh themselves daily and told that they would receive feedback on their weight. Overall, 264 participants (92%) completed the trial. Mean weight gain from baseline to 12 months was 1.8 kg (95% CI 0.5-3.1) in the intervention group ( $n = 131$ ) and 1.8 kg (95% CI 0.6-3.0) in the control group ( $n = 133$ ). There was no evidence of an effect on weight at 12 months. Intervention participants weighed themselves more frequently than control participants and were more physically active. Intervention participants reported greater satisfaction with weight outcomes, more planning for dietary and physical activity goals and for managing lapses, and greater confidence for healthy eating, weight loss, and WLM. The authors concluded there was no difference in the WLM of participants who received the NULevel intervention compared to participants who received standard lifestyle advice via newsletter.



### [Interactive Effect of Probiotics Supplementation and Weight Loss Diet on Metabolic Syndrome Features in Patients With Coronary Artery Diseases: A Double-Blind, Placebo-Controlled, Randomized Clinical Trial.](#)

*American Journal of Lifestyle Medicine* published online May 3, 2019. 44 patients in overweight BMI category with CVD received weight loss program (5% to 10% of initial body weight) throughout the study course. The subjects were randomly assigned into intervention or placebo groups (n = 22, each) and received a probiotic or maltodextrin capsule/day, respectively, for 12 consecutive weeks. There was a significant decrease in total cholesterol ( $-30.7 \pm 49.83$  vs  $-5.9 \pm 65$  mmol/L,  $P = .043$ ) and low-density lipoprotein cholesterol ( $-25.64 \pm 51.7$  vs  $-5.44 \pm 70.1$  mg/dL,  $P = .049$ ) in the probiotic group compared to the placebo group. Other MetS feature indices and blood pressure did not differ significantly within or between groups.

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## Conferences



**Did you know that the DOC Network offers honorariums to members for conference notes relevant to diabetes, obesity and cardiovascular health.** If you attended a conference and have notes you want to share, please contact Carol at [carolclarke.rd@sympatico.ca](mailto:carolclarke.rd@sympatico.ca).

**Webinars:** The DOC Network welcomes presenter submissions for webinars. If you have a nutrition topic or area of interest related to diabetes, obesity and/or cardiovascular health that you would like to present (or you know an expert), please use the [DOC Network Webinar Submission Form](#). Honorarium provided.

View [archived webinars](#) and [archived conference reports](#) on the DOC Network Online Community.

### NEW

[Summary notes from Annual Scientific Day on T1DM](#), Banting and Best Diabetes Centre held May 10, 2019 in Toronto. Topics: The new Medtronic 670 G insulin pump; stem cell therapy; engaging the disengaged; adjunctive agents to insulin; Why, How and What Patients are DIYing (Do It Yourself); CHO restricted diets; modern technology.

## Ongoing

### [Certified Bariatric Educator \(CBE\) Program](#)

Developed by Obesity Canada (formerly Canadian Obesity Network) this in-depth, evidence-based program is designed for healthcare professionals who understand the principles of obesity management and want to advance their practice to the next level.

[Craving Change™ Certified Facilitator](#) online training

### [Diabetes Educator Graduate Certificate Program](#)

### [Aboriginal Relationship and Cultural Competency courses](#)

DOC Network Online Community Orientation videos. [Five to 10 min videos on how to use our Online Community web pages.](#)

If you know of events  
not in our Calendar,  
please forward information to  
[carolclarke.rd@sympatico.ca](mailto:carolclarke.rd@sympatico.ca)

## Upcoming

(View [Events Calendar](#) in Online Community)

### **DOC Network webinars Save The Date (Noon ET):**

Heart healthy culinary skills for seniors: increasing confidence, connection and wellness - June 20

[DC Annual Conference](#), Ottawa, ON. June 5-8, 2019. Sessions on ketogenic diet, weight stigma, cannabis. DOC Network Social Event June 6.

[ASMBS \(American Society for Metabolic and Bariatric Surgery\) Weekend](#). Chicago, IL. June 20-22, 2019.

### [Weight Neutral 4 Diabetes Care Symposium.](#)

Online July 8-29, 2019.

### **NEW** [10th Learning Retreat On The Principles And Practice Of Interdisciplinary Obesity Management.](#)

Toronto, ON. October 10-11, 2019. Early bird Sept 12.

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# Observations



## [Glucose and Lipid Homeostasis and Inflammation in Humans Following an Isocaloric Ketogenic Diet.](#)

*Obesity* published online May 8, 2019. Glucose homeostasis, lipid homeostasis, and inflammation were studied in 17 men (BMI: 25-35 kg/m<sup>2</sup>) during 4 weeks of a baseline diet (BD -15% protein, 50% carbohydrate, 35% fat) followed by 4 weeks of an isocaloric ketogenic diet (KD - 15% protein, 5% carbohydrate, 80% fat). Postprandial responses were assessed following mixed-meal tests matched to compositions of the BD (control meal [CM]) and KD (ketogenic meal). Switching to the KD was associated with increased cholesterol and inflammatory markers, decreased triglycerides, and decreased insulin-mediated antilipolysis. Glucose homeostasis parameters were diet dependent and test meal dependent.

### Full Text Article

[Investigating the effect of sex and ketosis on weight-loss-induced changes in appetite.](#) *The American Journal of Clinical Nutrition* 109(6):1511-1518. Published online May 9, 2019. The aim of this study was to examine if sex modulates the impact of weight loss (WL)-induced changes in appetite and if ketosis alters these responses. Ninety-five individuals (55 females) with BMI 37± 4 underwent 8 weeks of a very-low-energy diet, followed by 4 weeks of refeeding and weight stabilization. The authors concluded ketosis appears to have a greater beneficial impact on GLP-1 in females. However, sex does not seem to modulate the changes in the secretion of other appetite-related hormones, or subjective feelings of appetite, seen with WL, regardless of the ketotic state.

### Full Text Article

[Daily Self-Weighing to Prevent Holiday-Associated Weight Gain in Adults.](#) *Obesity* published online May 22, 2019. The objective of this study was to test the efficacy of daily self-weighing (DSW) using visual graphical feedback (GF) to prevent holiday weight gain. 111 adults were randomly assigned into a control or DSW + GF group and completed the preholiday visit (v1; before Thanksgiving), the postholiday visit (v2; after New Year's Day), and the follow-up visit (v3; 14 weeks after v2). The participants in the DSW + GF group performed DSW with Wi-Fi scales during the holidays and were told to try not to gain weight above baseline weight. There was no change in weight with DSW + GF, whereas the control group gained weight from v1 to v2 (-0.13 ± 0.27 kg vs. 2.65 ± 0.33 kg,  $P < 0.001$ , respectively). In the control group, weight change was similar between individuals with overweight or obesity [as measured by BMI] (OW/OB) versus individuals with normal weight (2.71 ± 0.48 kg vs. 2.62 ± 0.43 kg, not significant, respectively). For DSW + GF, individuals with OW/OB lost weight whereas those with normal weight maintained weight during the holidays (-1.46 ± 0.62 kg vs. 0.33 ± 0.27 kg,  $P = 0.01$ , respectively). The control group lost weight during the follow-up (-1.14 ± 0.43 kg,  $P = 0.01$ ; v2 to v3) but retained 57% of weight gain; therefore, weight gain from v1 to v3 was significant (1.51 ± 0.39 kg,  $P < 0.001$ ).

**DOC Network Note:** A perspective from [ConscienHealth](#): This study is interesting because lots of people regret gaining weight on a holiday. The solution seems simple. Pay attention. But put this in the context of a longer-term [study of self-weighing](#) recently published in *PLOS Medicine*. For preventing weight regain, self-weighing was completely ineffective. So what are we to think? We have two suggestions. First and foremost, what's sometimes helpful is not always helpful. Self-weighing can help some people in some situations. In other situations, it might not help. And in fact, for folks with eating disorders, self-weighing can be quite harmful. One size never fits all. Second, you might think of this study as a confirmation of the [Hawthorne effect](#). When people are paying attention to you, you change what you're doing. Without a doubt, subjects in the self-weighing group knew that someone was observing their weight. So we're not surprised that they didn't gain weight while being watched. Step on the scales to keep from gaining weight? That's up to you. It might help or it might not be the right thing to do. It all depends.

In a related article from ConscienHealth: [Does Physical Activity and Self-Weighing Prevent Weight Regain?](#) It's complicated.

### Full Text Article

[The Potential Role of Protein Leverage in the US Obesity Epidemic.](#) Perspective from Kevin D. Hall. *Obesity* published online May 16, 2019. According to food balance sheets published by the Food and Agriculture Organization of the United Nations, while the absolute protein content of the US food supply has increased since the early 1970s, the fraction of available calories from protein has decreased by ~1% because of greater increases in available carbohydrate and fat. Counterintuitively, even such a small decrease in the protein fraction of the food supply has the potential to result in relatively large increases in energy intake according to the protein leverage model. Therefore, while the protein

leverage effect is unlikely to fully explain the obesity epidemic, its potential contribution should not be ignored.

Full Text  
Article

[Association between consumption of ultra-processed foods and all cause mortality: SUN prospective cohort study.](#) *BMJ* 2019;365:l1949. Published online May 29, 2019. 19 899 participants (12 113 women and 7786 men) aged 20-91 years followed-up every two years between December 1999 and February 2014 for food and drink consumption, classified according to the degree of processing by the NOVA classification, and evaluated through a validated 136 item food frequency questionnaire. A higher consumption of ultra-processed foods (>4 servings daily) was independently associated with a 62% relatively increased hazard for all cause mortality. For each additional serving of ultra-processed food, all cause mortality increased by 18%.

**DOC Network Note:** PEN@ did a [Trends Analysis report](#) on this study citing its numerous limitations and concluding "The results portray a very weak relationship between ultraprocessed foods and mortality."

Full Text  
Article

[BMJ Editorial: Ultra-processed food and adverse health outcomes.](#) Published online May 29, 2019.

Full Text  
Article

[CMAJ News: Fat shaming is making people sicker and heavier.](#) Fat shaming is harmful to health and may drive weight gain, said presenters at the Canadian Obesity Summit, recently held in Ottawa.

DM

Full Text  
Article

[Association of Social and Behavioral Risk Factors With Earlier Onset of Adult Hypertension and Diabetes.](#) *JAMA Netw Open.* 2019;2(5):e193933. Early onset of diabetes was associated with depressive symptoms, smoking, high stress, concentrated neighborhood poverty, intimate partner violence, financial worries, being separated or single, and having less than a high school diploma, with a 1.53 hazard ratio among those with more than three risk factors. Infrequent exercise, having less than a high school diploma, concentrated neighborhood poverty, smoking and being widowed were tied to early onset of hypertension, with a hazard ratio of 1.41 for those with more than three risk factors.

B5x

[Five-Year Outcomes of Gastric Bypass in Adolescents as Compared with Adults.](#) *N Engl J Med* 2019; 380:2136-2145. This study evaluated the health effects of Roux-en-Y gastric bypass in a cohort of adolescents (161 patients enrolled from 2006 through 2012) and a cohort of adults (396 patients enrolled from 2006 through 2009). There was no significant difference in percent weight change between adolescents (-26%; 95% confidence interval [CI], -29 to -23) and adults (-29%; 95% CI, -31 to -27) 5 years after surgery (P=0.08). After surgery, adolescents were significantly more likely than adults to have remission of type 2 diabetes (86% vs. 53%; risk ratio, 1.27; 95% CI, 1.03 to 1.57) and of hypertension (68% vs. 41%; risk ratio, 1.51; 95% CI, 1.21 to 1.88). Three adolescents (1.9%) and seven adults (1.8%) died in the 5 years after surgery. The rate of abdominal reoperations was significantly higher among adolescents than among adults (19 vs. 10 reoperations per 500 person-years, P=0.003). More adolescents than adults had low ferritin levels (72 of 132 patients [48%] vs. 54 of 179 patients [29%], P=0.004).

CV

Full Text  
Article

[Effect of a Lifestyle Intervention Program With Energy-Restricted Mediterranean Diet and Exercise on Weight Loss and Cardiovascular Risk Factors: One-Year Results of the PREDIMED-Plus Trial.](#) *Diabetes Care* 2019 May; 42(5): 777-788. Adults with BMI in overweight or obese category with metabolic syndrome aged 55-75 years (n = 626) were randomized to an intensive weight loss lifestyle intervention based on an energy-restricted Mediterranean diet, physical activity promotion, and

behavioral support (IG) or a control group (CG). Diet and physical activity changes were in the expected direction, with significant improvements in IG versus CG. After 12 months, IG participants lost an average of 3.2 kg vs. 0.7 kg in the CG ( $P < 0.001$ ), a mean difference of  $-2.5$  kg (95% CI  $-3.1$  to  $-1.9$ ). Weight loss  $\geq 5\%$  occurred in 33.7% of IG participants compared with 11.9% in the CG ( $P < 0.001$ ). Compared with the CG, cardiovascular risk factors, including waist circumference, fasting glucose, triglycerides, and HDL cholesterol, significantly improved in IG participants ( $P < 0.002$ ). Reductions in insulin resistance, HbA<sub>1c</sub>, and circulating levels of leptin, interleukin-18, and MCP-1 were greater in IG than CG participants ( $P < 0.05$ ). IG participants with prediabetes/diabetes significantly improved glycemic control and insulin sensitivity, along with triglycerides and HDL cholesterol levels compared with their CG counterparts.

**Full Text  
Article**

**[Ultra-processed food intake and risk of cardiovascular disease: prospective cohort study \(NutriNet-Santé\)](#)**. *BMJ* 2019;365:l1451. Published online May 29, 2019. 105 159 participants aged at

least 18 years in France between 2009 and 2018. Dietary intakes were collected using repeated 24 hour dietary records (5.7 for each participant on average), designed to register participants' usual consumption of 3300 food items. These foods were categorised using the NOVA classification according to degree of processing. In this large observational prospective study, higher consumption of ultra-processed foods was associated with higher risks of cardiovascular, coronary heart, and cerebrovascular diseases. These results need to be confirmed in other populations and settings, and causality remains to be established. Various factors in processing, such as nutritional composition of the final product, additives, contact materials, and neofomed contaminants might play a role in these associations, and further studies are needed to understand better the relative contributions.

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## Practice



**Member Resource Exchange.** If you have resources you'd like to share with other Network members, watch this [short video on how to upload your resource\(s\)](#) to our Online Community.

**Diet Trends: Evidence Analysis on the Ketogenic Diet** was published. [Read the full report or the summary of the 'Bottom Line'](#) for weight loss, CV health and diabetes management.

**[From Today's Dietitian magazine 'Today's Fad Diets'](#):** Optavia, Noom, Celery Juice, The Shepherd's Diet, The Carnivore Diet,

DM

**Full Text  
Article**

**[REAL-World Health Outcomes of Insulin Glargine 300 U/mL versus Insulin Glargine 100 U/mL in Patients with Type 1 & Type 2 Diabetes in the Canadian LMC Diabetes Patient Registry: The REALITY Study](#)**. *Canadian Journal of Diabetes* published online May 7, 2019. In a real-world

clinical setting, insulin-naïve patients who initiated Gla-300 or Gla-100 showed similar changes in A1C and weight. Patients with T1D or T2D using Gla-300 transferred from another basal insulin, had significant reductions in A1C with no change in weight or insulin dose.

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## [Coast-to-Coast Entries](#)

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May 21 – Cheryl Carl - Wondering if anyone has any suggestions regarding managing a T1DM who wishes to follow a keto diet (or diet very low in CHO). RD Speaker at Charles Best Day suggested more frequent monitoring of ketones but did not give specifics on how often etc.. Would appreciate any thoughts/advice. Thanks. **One response.**



May 23 – Lucy Yixuan Zhang - Researchers at Brescia are currently surveying RDs on their experiences with the Nutrition Therapy chapter of the Diabetes Canada Clinical Practice Guidelines. If interested, please find the survey at the following link: [https://uwo.eu.qualtrics.com/jfe/form/SV\\_57721JHF6smhCQZ](https://uwo.eu.qualtrics.com/jfe/form/SV_57721JHF6smhCQZ)

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## Evidence



**[Omega-3 and omega-6 polyunsaturated fatty acids and metabolic syndrome: A systematic review and meta-analysis.](#)** *Clin Nutr.* 2019 Apr 5. pii: S0261-5614(19)30146-3. Epub ahead of print. Thirteen studies (2 case-control, 9 cross-sectional, 1 nested case-control, and 1 prospective cohort) with 36,542 individuals were included. Higher omega-3 PUFA levels in diets or blood were associated with a 26% reduction in the risk of MetS (odds ratio (OR)/relative risk (RR) 0.74, 95% confidence interval (CI) 0.62-0.89). This inverse association was evident among studies with Asian populations (OR/RR 0.69, 95% CI 0.54-0.87), but not among those with American/European populations (OR/RR 0.84, 95% CI 0.55-1.28). Null results were found regarding the association between circulating/dietary omega-6 PUFAs and MetS.

**[Adherence to the Mediterranean Diet in Relation to All-Cause Mortality: A Systematic Review and Dose-Response Meta-Analysis of Prospective Cohort Studies.](#)** *Adv Nutr.* 2019 May 21. Epub ahead of print. Twenty-nine prospective studies with 1,676,901 participants and 221,603 cases of all-cause mortality were included in the final analysis. The pooled HR of all-cause mortality was 0.90 (95% CI: 0.89, 0.91; I<sup>2</sup> = 81.1%) for a 2-point increment in adherence to a MedDiet. Subgroup analyses showed that a significant inverse association was stronger in participants who lived in the Mediterranean region compared with non-Mediterranean areas (HRs: 0.82 compared with 0.92, respectively), and in studies that used the Panagiotakos MedDiet score. A nonlinear dose-response meta-analysis indicated that the risk of all-cause mortality linearly decreased with the increase in adherence to a MedDiet. The robustness of findings was confirmed in the sensitivity analyses. In conclusion, low-quality evidence from prospective cohort studies suggests an inverse association between adherence to a MedDiet and the risk of all-cause mortality, especially in Mediterranean regions. An inverse linear dose-response relation was also observed between adherence to a MedDiet and the risk of all-cause mortality.

**[Association of Gestational Weight Gain With Adverse Maternal and Infant Outcomes.](#)**

*JAMA.* 2019;321(17):1702-1715. In this meta-analysis of individual participant data from 25 pooled cohort studies and 196 670 participants, prepregnancy weight and the magnitude of gestational weight gain were associated with risk for any adverse outcome (defined as  $\geq 1$  of the following: preeclampsia, gestational hypertension, gestational diabetes, cesarean delivery, preterm birth, and small or large size for gestational age at birth); however, the magnitude of gestational weight gain was weakly associated with the adverse outcomes assessed.

**[Association between early antibiotic exposure and risk of childhood weight gain and obesity: a systematic review and meta-analysis.](#)** *J Pediatr Endocrinol Metab.* 2019 May 27;32(5):439-445. Nineteen studies involving at least 671,681 participants were included. Antibiotic exposure in early life was significantly associated with risk of childhood weight gain and obesity (odds ratio [OR]: 1.05, 95% confidence interval [CI]: 1.04-1.06).

OB

Full Text  
Article

**[The Effectiveness of Nutrition Specialists on Pediatric Weight Management Outcomes in Multicomponent Pediatric Weight Management Interventions: A Systematic Review and Exploratory Meta-Analysis.](#)** *Journal of the Academy of Nutrition and Dietetics* 119(5):799-817.e43. Ninety-nine studies and 209 study arms were included. The nutrition specialist-only condition resulted in increased reductions in BMI z score compared with behavioralist-only, combined nutrition specialist and behavioralist, and neither nutrition specialist or behavioralist category (reference) throughout the analysis. Meta-regression analysis indicated that the difference in BMI z score between the

nutrition specialist-only category and the reference category was significant at 3 to <6 months, 6 months to <1 year, and 1-year to 2-year time points (P=0.01, P=0.05, and P=0.01, respectively). There were smaller increases in BMI over time for the nutrition specialist-only provider category compared with reference categories, and this difference was significant at the 3 to <6 months and 1-year to 2-year time points (P=0.001 and P=0.05, respectively). There were no significant differences among provider categories for waist circumference at any time point.

BSx

Full Text  
Article

[Alteration Pattern of Taste Perception After Bariatric Surgery: a Systematic Review of Four Taste Domains](#). *Obes Surg* (2019) 29: 1542. Our study showed that bariatric surgery is associated with significant change in sensitivity to all four taste domains especially salt taste, sweetness, and sourness. LSG patients showed an increased sensitivity to all four taste domains. However, RYGB patients had a variable alteration pattern of taste perception but more commonly a decreased sensitivity to sweetness and an increased sensitivity to salt taste and sourness. Additionally, AGB patients had a decreased sensitivity to sweetness, salt taste, and sourness. The authors concluded bariatric surgery is associated with taste change in a way which results in less preference for high-calorie food and possibly reduced calorie intake. This may explain one of the mechanisms by which bariatric surgery produces weight loss.

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