Registered Dietitian Nutritionists (RDNs) have a professional duty to practice in a respectful manner that protects the wellbeing of the patients and clients they serve. An issue of recent interest among RDNs and other health professionals working in weight management is weight stigma and its potential negative impacts. On both the individual and population level, weight stigma can act as a barrier to health through social, psychological, and physical mechanisms.1 As the coronavirus disease 2019 (COVID-19) has spread, weight stigma has become an increased concern due to its potential to cause additional harm to at-risk groups with overweight and obesity.

As part of commitment to the Code of Ethics for the Nutrition and Dietetics Profession, Principles 1 and 4, which encourage practicing in a caring and respectful manner and promoting fairness and objectivity,2 dietetic professionals have a responsibility to understand weight stigma and actively work toward its reduction in professional settings.

Defining Weight Stigma

Stigma, as defined by Goffman, relates to the possession of an attribute that sets a person apart from societal norms or expectations, and the person possessing that attribute is seen as devalued and discredited by society.3 In regard to weight, falling outside of societal expectations for body shape or size can result in weight stigma. Weight stigma most commonly relates to the stigma of overweight or obesity, though it should be noted that weight stigma can also be experienced by people who are classified as underweight.4 People with overweight and obesity are often assumed to possess negative traits due to their weight, such as laziness, lack of willpower, or less competence in employment settings.5

(Continued on page 2)
Much of the research on the origins of weight stigma points to the role of attribution in shaping beliefs about overweight and obesity. Attribution theory in relation to weight status suggests that negative beliefs about people with obesity exist due to beliefs that their weight is determined by controllable factors. People with obesity are seen as directly causing their obesity through personal actions, which falls in contrast with the values of self-determination and willpower prevalent in American culture. In a clinical setting, this can manifest as healthcare providers blaming people with obesity for their condition, and subsequently providing little support for “simple” lifestyle changes. Individuals often believe that weight stigma is justified because of the belief that weight is entirely under personal control, thus being at a higher weight reflects a personal failure.

Experiences of Weight Stigma
People with obesity may have many experiences with weight stigma. Children with overweight or obesity may experience bullying or teasing. One study completed among 2,793 middle and high school students found that 35.3% of the students surveyed had experienced weight-related teasing. For students with obesity, the prevalence of weight-related teasing was significantly higher, at 59.7% for girls and 58.2% for boys. Among adults with overweight and obesity, experiences of weight stigma can come in the form of a comment from another person about their weight, being treated differently because of their weight, or feeling undervalued by society as a whole. Participants in a qualitative study about experiences of weight stigma reported that the most common sources of stigma were friends or family members. In addition to stigmatizing verbal comments from others, stigma can also be experienced through the physical environment. People can experience weight stigma if furniture, seat belts, or medical equipment are not accommodating to a variety of body sizes. Mass media is also a potential source of stigma, through portrayals of people with overweight and obesity that perpetuate negative stereotypes.

Of particular importance to RDNs is the weight stigma experienced by people with overweight and obesity in the healthcare setting, as the physical environment can be itself stigmatizing to people with overweight and obesity. Patients may feel alienated by equipment that is not able to accommodate their needs; for example, chairs, blood pressure cuffs, gowns, and scales that are not suitable for a wide range of body sizes may reinforce the belief that healthcare is not intended for larger bodies. Interactions with medical providers may also be stigmatizing if assumptions are made about a patient’s health or behaviors based solely on weight. For example, a provider may allocate time differently or spend less time with patients with obesity due to beliefs about the patients’ motivation to change health behaviors. Additionally, weight stigma can lead to a physician attributing most of the patient’s health concerns to their weight, rather than ordering diagnostic testing or providing treatments other than weight loss. The net effect of weight stigma can be that patients with obesity receive poorer quality care than patients who fall into the normal weight category.

Consequences of Weight Stigma
Experiencing weight stigma has been shown to lead to negative psychological, physical, and behavioral consequences that can undermine health and wellbeing. Psychologically, weight stigma has been associated with depressive symptoms, anxiety, binge eating behaviors, low self-esteem, and body image dissatisfaction. There is also evidence that weight stigma can interfere with weight loss efforts. One study used ecological momentary assessment to facilitate real-time investigation of the effects of weight stigma on behavioral intentions for dietary behaviors and physical activity and found that experiencing weight stigma led to lower positive affect and less motivation to perform health-promoting behaviors such as healthy eating in the moment the stigma was experienced. In contexts in which stigma becomes a chronic life experience, one study proposed a cyclic obesity/weight-based stigma model for how weight stigma can lead to further weight gain among people with obesity via physiological stress pathways and changes to eating behaviors.

Patients who experience repeated weight stigma in healthcare settings may be reluctant to seek future care for health issues. A recent review by Alberga et al found that many patients with obesity experienced weight stigma in health care, and as a result delayed or avoided preventive screening or other routine health care services. These patients expressed concerns about previous stigmatizing experiences, feelings of shame around their body shape or size, and apprehension about being weighed at medical appointments. This consequence of weight stigma is of particular concern with the current COVID-19 pandemic.

Weight Stigma and COVID-19
The Centers for Disease Control and Prevention (CDC) have identified obesity, characterized as a body mass index (BMI) ≥ 30, as a risk factor for developing severe illness from COVID-19. This designation was made with the “strongest and most consistent evidence”, due to results from several cohort studies and one cross-sectional study. Early evidence

(Continued on page 3)
established a relationship between severe obesity (BMI ≥ 40) and increased risk of complications from COVID-19, which resulted in an abundance of media coverage on the topic. As a result of this increased attention on weight and COVID-19, weight stigma became an area of concern for those with obesity and practitioners who treat obesity.

Weight stigma is an important consideration for health care providers who treat patients with obesity, particularly during the COVID-19 pandemic.20 One primary concern with COVID-19 is the importance of seeking treatment early, as the disease can lead to rapid decompensation in vulnerable populations. People with obesity may be less likely to seek treatment from a provider or hospital that has provided stigmatizing care in the past. People who get sick may choose to delay treatment as a way to avoid further experiences of weight stigma. Additionally, with the emphasis in the media on obesity as a risk factor for COVID-19, there is potential for public perception to shift blame to people with obesity for contracting COVID-19 due to personal responsibility for their body size. In reality, there is evidence that COVID-19 has a disproportionate impact on racial and ethnic minorities, who are also disproportionately affected by obesity.21 Not all groups experience weight stigma in the same ways, thus intersectionality is an important consideration when thinking about the potential consequences of weight stigma during the pandemic.22 People who have multiple stigmatized identities can become even less likely to seek potentially life-saving treatment for COVID-19.23

Weight stigma also has the potential to result in lower quality care within the acute care setting. Malnutrition remains a concern for COVID-19 patients with obesity, and it is important for providers to advocate for the initiation of nutrition support for critically ill patients to prevent loss of muscle mass, which could in turn contribute to poorer disease outcomes.23 Previous work in the critical care setting has indicated that patients with obesity are more likely to experience delays in initiation of nutrition support, which may be related to weight stigma.24

Media coverage of the pandemic and its effect on everyday life also has the potential to lead to greater weight stigma. Some have argued that weight stigma itself may be a major factor underlying the association between BMI and risk of hospitalization secondary to COVID-19.25 It is important to consider the way in which this relationship is presented to avoid blaming people with obesity for the potential medical outcomes of COVID-19 and further contributing to the stigmatizing belief that people with obesity are personally responsible for their weight due to individual health behaviors alone.

Social media has been another potential source of weight stigma during the pandemic. As people were urged to stay home due to government-issued public health guidance, many became concerned about weight gain associated with more time at home. Some images and text shared on social media during this time were stigmatizing toward people at higher weights. For example, a trend in social media posts was the idea of the “quarantine-15” or the “COVID-19”, with the underlying sentiment being that weight gain, or experiencing changes in body shape or size, would be a negative side effect of the stay-at-home orders.26 As noted by Pearl, these posts were often accompanied by images that reinforce negative stereotypes about people with obesity.26

Strategies to Reduce Weight Stigma

Weight stigma, while prevalent during both the COVID-19 pandemic and at other times, can be minimized. At the individual level, health care providers such as RDNs can take several actions to help their patients receive quality health care without weight stigma. RDNs can help to ensure that patients with obesity feel welcome in the physical environments where care is provided. For example, they can ensure the following are available: seating that can accommodate all body sizes; appropriately sized medical equipment; and scales in areas that allow for patient privacy.27 Providing training to clinical and non-clinical staff members on avoiding weight stigma can help staff learn how their actions may be perceived by people with obesity and may help to create a professional culture in a facility that supports respect for different body sizes. Additionally, executives can make inclusivity a priority by implementing workplace policies around acceptable language and behavior when working with patients with obesity.

When providing nutrition counseling to patients with obesity, RDNs should consider how their words may contribute to weight stigma. Different disciplines have different preferences on the language used to describe people whose weight would classify them as having overweight or obesity. In most medical literature, the words “overweight” and “obese” are used as clinical definitions of relative body size, defined by having a BMI from 25 to <30 and ≥30, respectively. However, there has been a recent push from groups such as the Obesity Action Coalition to use people-first language27 to describe people with obesity, especially following the classification of obesity as a disease in 2013.28 People-first language, or using the phrase “person with obesity,” rather than “obese person,” is lauded as one way to help reduce weight stigma in communicating about obesity: in the media; in health care settings; and in scientific journals.27 People-first language has been shown to be accepted terminology by individuals seeking bariatric surgery.27 Some have proposed the use of the phrase “higher weight”29 or “higher BMI”30 as a more neutral descriptor of body size, due to the societal and cultural implications of other terms and phrases.30 However, in health care practice it is imperative to respect patient preferences, acknowledging that preferences may differ widely from person to person. Koball et al noted that patient preferences for language used to discuss weight can be affected by internalized weight bias, or feeling that stereotypes about weight apply to them, thus their preferences for talking about weight may still be inherently stigmatizing.32

RDNs may ask patients about their preferences for discussing weight at their initial visit as a way to build rapport and establish strong communication between patient and provider (Table 1). In a weight management setting, weight may be the primary focus of nutrition...
counseling, however setting up shared expectations for how it will be discussed in sessions can help prevent patients from feeling stigmatized. Qualitative work indicates that patients sometimes feel stigmatized when discussing weight, thus providing space to discuss more helpful forms of dialogue around weight and health behavior change, particularly among those who have experienced past weight stigma, can promote better outcomes in counseling.

Patient differences should also be considered in counseling patients for weight management. In keeping with attribution theory, weight stigma can occur if a patient’s weight is attributed to his or her personal choices alone. It is crucial to acknowledge that the underlying causes of overweight and obesity can vary and are often related to other factors outside of a person’s control. The Obesity Society summarizes the potential contributors to obesity in a graphic that can be helpful in conceptualizing the underlying causes of obesity. There is growing evidence suggesting that the pathogenesis of obesity is grounded in biological processes, including perturbations of homeostatic energy balance. Setting reasonable nutrition goals that consider structural barriers can help build patient confidence in making dietary changes, while also respecting their individual differences and ability to make change.

For RDNs involved in health communication, action can be taken to avoid stigmatizing portrayals of individuals with obesity in public health messages. Several photo libraries are available for health professionals to use that show people with obesity depicted in ways that avoid harmful stereotypes or objectification. Two such libraries that are available at no cost are the media library through the UConn Rudd Center for Food Policy and Obesity and the Obesity Action Coalition. RDNs can set an example by including images in health messages and professional presentations that reflect diverse body sizes without association with common stereotypes.

Finally, RDNs working with people who have obesity should take time to evaluate their own biases about people with obesity. One potential strategy is the use of the “Fat People-Thin People” Implicit Associations Test (IAT) which measures implicit bias related to weight. The free interactive version of the IAT available from Harvard at implicit.harvard.edu uses silhouettes of both higher-weight and lower-weight people and has the user pair them with positive and negative words, including words associated with stereotypes about people with obesity. If the user is better able to associate negative words with the higher-weight silhouettes, the test indicates a greater degree of implicit bias toward higher-weight people. It is unclear whether the process of completing the IAT has utility in decreasing weight bias, though it may be a way to begin a conversation among health care providers about weight bias. More work is needed to develop and evaluate effective interventions to decrease weight stigma in health care providers.

Table 1. Ways to initiate a conversation about weight in a nutrition counseling session.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I’d like to take your weight now. Are you comfortable being weighed?”</td>
<td>“Is there any way I can make taking a weight measurement more comfortable for you? For example, you may prefer to be weighed in a private room or without other staff present.”</td>
</tr>
<tr>
<td>“Do you want to discuss changes in your weight each time we meet?”</td>
<td>“What type of language is most supportive to you when talking about your weight?”</td>
</tr>
<tr>
<td>“Are there any things I should avoid discussing related to your weight during our sessions?”</td>
<td></td>
</tr>
</tbody>
</table>

*Adopted from the Rudd Center, “Creating a Comfortable and Welcoming Office Environment for Patients with High Body Weight.” Accessible at http://uconnruddcenter.org*
There are resources available for RDNs seeking to learn more about weight stigma in health care and in society. Several organizations have developed materials that can be used for training health care providers or students on the nature of weight stigma and ways to prevent it in practice (Table 2).

**Conclusions**

Weight stigma continues to be a salient issue in discussions of health and health care, especially during the COVID-19 pandemic. It is important for weight management RDNs to understand how weight stigma can be experienced by the patients they serve, and seek to provide respectful, stigma-informed care to people with obesity. Weight management RDNs have an opportunity to take an active role in helping to decrease the weight stigma experienced by the patients they serve through individual health care, health care policy, and through the language they use to discuss obesity.

<table>
<thead>
<tr>
<th>Resources</th>
<th>Organization</th>
<th>Resource Description</th>
<th>How to Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handout:</td>
<td>Obesity Action Coalition</td>
<td>Guide for healthcare professionals describing weight bias, its effects on patients, and ways to decrease weight bias in practice.</td>
<td>Available at <a href="http://www.obesityaction.org">www.obesityaction.org</a></td>
</tr>
<tr>
<td>Presentation:</td>
<td>Rudd Center for Food Policy and Obesity at UConn</td>
<td>Educational presentation aimed at health care providers that provides an overview of weight bias and stigmatization and offers solutions for improving communication and health care quality.</td>
<td>Available at <a href="http://www.uconnruddcenter.org/weight-bias-stigma-health-care-providers">http://www.uconnruddcenter.org/weight-bias-stigma-health-care-providers</a></td>
</tr>
<tr>
<td>Handout:</td>
<td>Rudd Center for Food Policy and Obesity at UConn</td>
<td>Handout and checklist for preparing a medical office to see patients with obesity while reducing weight stigma. Includes suggestions for equipment to include in a stigma-informed office.</td>
<td>Available at <a href="http://www.uconnruddcenter.org/weight-bias-stigma-health-care-providers">http://www.uconnruddcenter.org/weight-bias-stigma-health-care-providers</a></td>
</tr>
</tbody>
</table>

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**Table 2.**

**Weight stigma resources aimed at health care providers.**

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(Continued on page 6)
References


(Continued on page 7)


The three goals for this column are:

1. Let WM DPG members know about the research initiatives WM DPG has, over the years, and continues to support.

2. Promote wider knowledge about the remarkable work, since 1966, of the Academy’s Foundation and how it supports our professional development through scholarships, awards, grants, fellowships, and much more.

3. Encourage WM DPG members to individually contribute to the Academy’s Foundation by setting up (at any point in your career) a long term giving plan. (More about this below.)

Regarding goal one, in each column I will put the spotlight on one of the four initiatives WM DPG has contributed to and continues to invest in. The focus of this column is Academy Foundation’s The Food and Nutrition Series.

**Project goal(s):** Given the high effectiveness but low utilization of medical nutrition therapy (MNT) by a Registered Dietitian Nutritionist (RDN), the Academy of Nutrition and Dietetics Foundation (Academy) has initiated a multi-year project to examine access by consumers to and the impact of credentialed nutrition and dietetics practitioners on three high-priority non-communicable diseases (NCD): 1) hypertension (HTN); 2) type 2 diabetes (T2DM); and 3) chronic kidney disease (CKD). The project kicked off with a forum in February 2020 held in conjunction with the Department of Nephrology at Georgetown University in Washington, DC. Presentations were given on the project’s purpose, measures that will inform a series of written reports, databases the evidence will be pulled from and analyses that are being considered. The forum’s outcome was a case for support that shows the public health value, economic impact and need for access to MNT. We hypothesize that where there is higher access and utilization of RDNs and their services, there are better health outcomes for people with these three morbidities.

**Background:** Prevalence of nutrition-related morbidities in the U.S. adult population is steadily rising in alignment with the rise of overweight and obesity. To ameliorate these comorbidities, lifestyle interventions with healthy eating and physical activity are thought to be cost effective. However, most U.S. adults do not routinely receive care by RDNs. They may receive nutrition care from less qualified health professionals or non-credible sources. Systematic reviews examining the effectiveness of RDNs conducting MNT show improved clinical outcomes in multiple morbidities. Currently, Centers for Medicare and Medicaid (CMS) provide reimbursement for MNT for people with CKD, DM (including gestational); however, use of these services and appropriated funds to reimburse for them has been pervasively poor. Similarly, initial studies indicate that use of Diabetes Self-Management Training (DSMT) benefits are also low. Barriers to usage include low awareness of benefits by beneficiaries and clinicians, lack of availability of services from RDNs who may perceive the process of CMS burdensome and complex, inconsistent coverage for MNT by non-Medicare payers and etc.

**WM DPG’s investment:** WM DPG made an investment of $10,000 to this Academy Foundation project.

**Publications and presentations:** The publication, “State of Food and Nutrition Series: The Impact of RDNs on Non-communicable Diseases: 2020 Forum Proceedings Paper” has been submitted to our journal.

**Project benefit to members:** This project has the capacity to identify challenges and develop solutions for ensuring individuals have access to high quality MNT. In doing so, it will elevate the work of the RDN and our effectiveness in improving health outcomes highlighted.

**Significance:** While nutrition-related factors are the primary cause of NCD and studies show that MNT by RDNs is effective in improving outcomes, access is poor. Understanding how people get access to MNT and the impact of that care can potentially lower overall healthcare cost and improve health outcomes. Understanding the systems and processes for referral, the barriers and facilitators to access and the impact of MNT will provide valuable information on how increased access can be achieved and, perhaps equally importantly, the savings in cost and improved health due to increased access.

(Continued on page 9)
Hope Warshaw is a Registered Dietitian and Certified Diabetes Care and Education Specialist (CDCES) who has been involved in weight management and diabetes care, education and support for over forty years. She applies her credentials as a consultant, book author, freelance writer and media spokesperson within her business, Hope Warshaw Associates, LLC, a consultancy based in Asheville North Carolina. Hope is the author of numerous consumer diabetes-focused books published by the American Diabetes Association and many consumer- and clinician-focused publications. During her career Warshaw has served in several volunteer roles with the Weight Management DPG including being a founding member and working on several symposiums. In leadership roles Hope served as chairperson of the Diabetes Dietetic Practice Group (DDPG) and was president of the Association of Diabetes Care and Education Specialists (formerly AADE). She currently serves on the Academy of Nutrition and Dietetics Foundation board in the role of secretary. It is in this role that she is writing these articles for WMDPG.

**Project status:** Currently we are working with epidemiologists to answer the question “Do people with hypertension, type 2 diabetes or CKD who have received nutrition care and services from an RDN have better outcomes than those who do not?” by analyzing retrospective data. Additionally, we are developing a prospective protocol to collect data which will allow us to better understand the barriers and facilitators to nutrition care.

It is my hope that with greater awareness of and insights into the breath and impact of the WM DPG support of the Academy Foundation’s projects encourages YOU, as an Academy member, to invest directly in the Academy Foundation. Since I joined the Foundation Board in 2018, I’ve been awed by the impressive direct impact of generous contributions to the Foundation from members and other organizations. All of these efforts will put our profession on firm footing well into our second century.

The Foundation’s mission is: “Through philanthropy, empower current and future food and nutrition practitioners to optimize global health.” The Foundation is living up to this mission through scholarships, awards, disaster relief efforts, research grants, fellowships and public nutrition education programs. Many food and nutrition professionals, including WM DPG members, are benefitting from the Foundation’s efforts. Over the last three years, the Foundation has provided $182,500 to WM DPG members through scholarship, award, grant and fellowship programs. Please consider applying for these opportunities and encouraging your colleagues to do so. Access this information at https://eatrightfoundation.org/ These have been made possible through the generosity of Foundation donors.

I know of no better way to invest in the future of our profession than with a gift to the Foundation. Please consider making an annual contribution. You can make a one-time or recurring gift online at https://eatrightfoundation.org/get-involved/donate/. Please consider making a contribution today and annually!

Acknowledgements: The author appreciates the input from Academy staff members Beth Labrador, Development Director for the Academy of Nutrition and Dietetics Foundation and Alison Steiber, PhD, RDN, Chief Science Officer, Research, International and Scientific Affairs, at the Academy of Nutrition and Dietetics.

Hope Warshaw is a Registered Dietitian and Certified Diabetes Care and Education Specialist (CDCES) who has been involved in weight management and diabetes care, education and support for over forty years. She applies her credentials as a consultant, book author, freelance writer and media spokesperson within her business, Hope Warshaw Associates, LLC, a consultancy based in Asheville North Carolina. Hope is the author of numerous consumer diabetes-focused books published by the American Diabetes Association and many consumer- and clinician-focused publications. During her career Warshaw has served in several volunteer roles with the Weight Management DPG including being a founding member and working on several symposiums. In leadership roles Hope served as chairperson of the Diabetes Dietetic Practice Group (DDPG) and was president of the Association of Diabetes Care and Education Specialists (formerly AADE). She currently serves on the Academy of Nutrition and Dietetics Foundation board in the role of secretary. It is in this role that she is writing these articles for WMDPG.
Geeta Sikand, MA, RDN, FAND, CDE, CLS, FNLA
(Excellence in Research Award)

Geeta Sikand is Director of Nutrition at the University of California Irvine Preventive Cardiology Program and an Associate Clinical Professor of Medicine (Cardiology Division).

Geeta is a recipient of multiple honors, including the 2019 Academy of Nutrition and Dietetics Medallion Award; 2019 Outstanding Dietitian Award from California Academy of Nutrition and Dietetics; 2019 SCAN DPG Excellence in Cardiovascular Nutrition Practice Award; and the 2019 Pacific Lipid Association President’s Service Award.

Her research is dedicated to examination of the clinical and cost outcomes of medical nutrition therapy by dietitians for the management of dyslipidemia, weight management, hyperglycemia and hypertension. She is the lead author of “Clinical and Cost Benefit of Medical Nutrition Therapy by Registered Dietitians for Management of Dyslipidemia: A Systematic Review and Meta-analysis” published in the Journal of Clinical Lipidology.

Geeta serves on the Boards of Governors of the National Lipid Association (NLA), is co-chair of the Nutrition Task Force, and co-author of the “National Lipid Association Recommendations for Patient-Centered Management of Dyslipidemia”.

Shelly Summar, MSEd, RD, LD
(Excellence in Practice Award)

Shelly Summar serves as the Program Manager of Weighing In, a program at Children's Mercy Kansas City, working to lead community collaboration supporting healthy lifestyles.

Shelly is a registered dietitian with over 25 years of experience treating children and families for nutrition related issues. She received her undergraduate degree in Nutritional Sciences from Kansas State University, and her Masters in Exercise Physiology from the University of Kansas.

Shelly completed a Certificate of Training in Childhood and Adolescent Weight Management through the Academy of Nutrition and Dietetics, and participated in the Healthy Communities Leadership Academy through the Health Forward Foundation in Kansas City.

She is currently involved in leading the Healthy Lifestyles Initiative, which includes sharing a community message, 12345 Fit-Tastic! This initiative promotes physical activity through the development of a regional physical activity plan, establishes a hospital supported community garden, and works within the hospital setting to implement a healthy hospital initiative.

Michelle Cardel, PhD, MS, RD, FTOS (Excellence in Emerging Outcomes Research Award)

Dr. Cardel is an assistant professor, and obesity and nutrition scientist in the Department of Health Outcomes and Biomedical Informatics at the University of Florida (UF), where she is also an Associate Director for the Center for Integrative Cardiovascular and Metabolic Diseases. Her research focuses on implementing weight management interventions, characterizing psychosocial factors, including low social status and food insecurity, that influence eating behavior, implementation science, and health disparities.

Dr. Cardel is a member of the American Society for Nutrition (ASN), and Fellow of The Obesity Society. Her research is published in JAMA, JAMA Pediatrics, and Obesity. Dr. Cardel has received several awards including the University of Alabama at Birmingham (UAB) Outstanding Woman Award; UAB’s National Alumni Society Young Alumni Rising Star Award; and the ASN Grand Prize for Young Minority Investigators Award. She has been co-investigator or principal investigator on several obesity grants, including her current NIH K01 career development award.

Dr. Cardel received her bachelor’s degree in biology at Florida State University. Her master’s degree in clinical nutrition and doctoral degree in Nutrition Sciences were awarded from UAB.

Ginger Cochran, MS, RDN, CEP-ACSM, CDCES
(Excellence in Emerging Practice Award)

Ginger Cochran is a Certified Diabetes Care and Education Specialist and Clinical Educator for Tenet Health Central Coast’s First California Physician Partners in San Luis Obispo, California. Ginger graduated from California Polytechnic State University in San Luis Obispo with a BS in Nutrition, and an MS in Kinesiology. Her graduate research focused on reducing childhood obesity via a nutrition education program which has become a national program. She also interned at Hilton Head Health in South Carolina, where she assisted the Arts & Entertainment channel for its show, “Heavy.”

She is on the editorial board of the Academy of Nutrition and Dietetics Nutrition Care Manual® and on the San Luis Obispo County Health Commission Board. Ginger has served as president of the local dietetic chapter, contributed to the Commission on Dietetic Registration’s Certified Specialist in Weight and Obesity Management exam, and has worked on projects for the Today Show Dietitian, Joy Bauer. The California...
Incorporating Results of Genetic Testing into Weight Management Nutrition

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Ashley J. Vargas, PhD, MPH, RDN, Eunice Kennedy Shriver National Institute of Child Health and Human Development

Nutrigenetics focuses on “the effect of genetic variation on the interaction between diet and disease” and nutrigenomics focuses on “the effect of nutrients on the genome, proteome, and metabolome.” Therefore, so-called personalized or precision nutrition genetic tests which use genetic information to tell an individual what they should eat are technically nutrigenetic tests but colloquially these tests are often referred to as “nutrigenomics tests.” The nutrigenomics testing market has been forecast to grow between 11-13% globally from 2018-2025. News reports frequently surface discussing this topic, and some weight management programs have begun to refer patients to genetic testing. Noom® and orig3n® use AncestryDNA® or 23andMe® data. DNAFit® uses its own testing or results from 23andMe or AncestryDNA. RDNs are increasingly faced with patients seeking help interpreting the results of a genetic test. It is important for practicing dietitians to be aware of the current state of nutrigenomics as well as reliable resources for patients and appropriate education and interventions.

Review of the current evidence on incorporating genetic testing into nutrition counselling and care

In 2019, the Academy of Nutrition and Dietetics undertook a review of the literature to evaluate the level of scientific evidence for incorporating genetic testing into clinical nutrition practice. While adults and children were included in the literature search, it should be noted no studies in children met inclusion criteria for this systematic review and therefore all results presented are for adults only. Overall, this systematic review found insufficient evidence for supporting genetic testing in weight management nutrition counseling and care. Specifically, the conclusions are: “No significant differences in weight, BMI or waist circumference were observed when results of genetic testing were incorporated into nutrition counseling as compared to counseling or care that did not incorporate genetic results.” These findings received a Grade II rating indicating moderate certainty in this conclusion statement. The other finding related to weight management is: “In participants with non-alcoholic fatty liver disease, there was a greater reduction in body fat percent when results of genetic testing were incorporated into nutrition counseling as compared to counseling or care that did not incorporate genetic results.” However, this finding received a Grade III rating indicating only limited evidence supported this conclusion statement. Further, in this same study, there was no difference in lean mass percent which seems inconsistent with the observed decrease in body fat percent. This systematic review had enough studies to conduct a meta-analysis which quantified the effect of incorporating genetic testing into nutrition practice on weight and/or BMI outcomes using statistical tests across studies. No statistical effect of incorporating genetic testing was observed for these outcomes. From this systematic review and meta-analyses, the Academy developed a position paper on incorporating genetic testing into nutrition practice.

Multiple studies measure genetics and there are occasionally observed associations with an obesity-related outcome with gene(s) of interest. However, this is observational data, which is a lower level of evidence, as genetics were not tested as part of the intervention itself. While promising, these require confirmation by intervention studies. There was one major study which did use genetics as part of a dietary intervention.

The Nutrigenomics, Overweight/Obesity and Weight Management Trial (NOW) is a randomized control trial of community-dwelling adults (n = 140) recruited from the Group Lifestyle Balance Program (GLB) in Ontario, Canada. The GLB program is an evidence-based, intensive weight management program. Participants were randomized to receive the standard GLB program and population-based lifestyle advice for weight management or a modified GLB program with genetic-based lifestyle advice for weight management. The GLB program with genetic-based lifestyle advice for weight management allowed for greater reductions in percent weight loss compared to the standard program. This suggests that incorporating genetic testing into nutrition counseling and care may be effective in certain populations.

Therefore, it is important for dietitians to be aware of the current state of nutrigenomics and how best to guide their patients, especially in terms of weight management.

This issue’s Research article delves into the current state of nutrigenomics, best practices for dietitians, and reliable resources for our weight management patients in this evolving area of research.

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and absolute body fat percentage at the 3- and 6-month follow up when compared to the standard GLB group. While the NOW trial and previous work show promising results for precision nutrition care in weight management and utilizing nutrigenetic analyses, there is still more work to be done to assess the best route of care and recommendations to make regarding genetic variations.

Practicing dietitians should continue to keep current in the literature, and follow the most recent developments in this emerging area in research. In addition, RDNs may find the question and answer section below useful in their current clinical practice for this ever-evolving field of nutrition.

Clinician question and answer

1) What would be good resources for RDNs with questions about genetic influence on obesity?

Three great resources are listed below:

- A summary of the causes of obesity, including a focus on genetics, by the Centers for Disease Prevention and Control at Behavior, environment, and genetic factors all have a role in causing people to be overweight and obese.17
- A summary on the role of genetics in obesity by the Obesity Medicine Association at Obesity and Genetics - Nature - Nurture.18
- Clinicians can search “Obesity” here to find scientific publications on genetics and obesity at PHGKB: Main|Home.19

2) To whom and where should RDNs advise patients go to with questions about a specific test result from a genetic test?

There is no one website with accurate, up-to-date and easy to read information about each gene and each SNP within each gene. Some outstanding examples do exist for specific, commonly sequenced genes. For example there are excellent resources on MTHFR20 and MC4R21 for the informed patient. FTO, APOA2, TCF7L2, and PPARG2 for response to diet are genetic variants which have been linked to diet response. RDNs should encourage patients to turn to genetic counselors to aid in interpreting genetic testing results. Genetic counsellors are the best partners, but they are often not easily accessible through the medical system. Often companies which provide genetic testing also provide access to genetic counselors and this may be helpful particularly if patients do not have access to a genetic counselor through traditional medical pathways. Companies do also provide information on genes via websites and reports, but RDNs should review the materials with their patients as they would with any marketed product materials. RDNs may be questioned about the accuracy or validity of these genetic tests. This is a tricky question because there are two important points to convey to the patient/client:

- These genetic tests are highly accurate at determining the presence of a genetic polymorphism (SNP). The technology for genetic sequencing is highly accurate, so companies often advertise this accuracy.
- These genetic tests are not accurate at determining a patient’s/client’s risk of disease, meaning these have limited clinical utility, because:
  - Not all genes are measured so there may be other genes not measured which are associated with risk;
  - Even if the complete genome is sequenced, scientists do not know what the function is of all the genes or how these work together to alter disease risk;
  - There are also other factors which ultimately determine if someone will get a disease besides genes (see the CDC and Obesity Society resources for further explanation about causes of obesity above);
  - All of these reasons are supported by the systematic review by the Academy which concluded there is currently not enough scientific evidence to suggest using genetic information in the clinic will positively impact patient outcomes in weight management or obesity.

3) Is there a sufficient level of evidence to support incorporating genetic testing into nutrition counseling or care for weight management or for disease risk reduction?

Not yet, based on the systematic review and meta-analysis done by the Academy. (Note this review did not look at the evidence for established genetic testing on infants for inborn errors of metabolism such as Prader-Willi syndrome, phenylketonuria, and maple syrup urine disease).

4) How does an RDN communicate genetic risk of obesity versus other risks to patients?

A recent study combining >2 million measurements (SNPs) on the genome was only able to predict ~23% of an individual’s BMI,22 and that number was consistent with previous studies. Recall that genetic tests available to the public often only test one or a few areas of the genome for risk of obesity. This suggests the environment and behaviors of an individual are more important predictors of BMI than genetics. In general, family history is a better indicator of risk of obesity than genetics alone because it reflects inherited genes and likely includes the environment in which an individual grew up, and may continue to live in, such as: empty calories available around the home; availability of fruits and vegetables; relative importance of diet and health, physical activity preferences, and taste and cooking preferences.23

5) What can an RDN say to patients who may feel genetic results indicate inevitability for developing a disease state?

It has been said by many, “your genes are not your destiny”. Genes are responsible for ~23% of obesity,22 and everyone knows a family where one individual is of a normal BMI while the rest have higher BMIs. It is possible to beat the odds and overcome this probability. Furthermore, it could be said, “your measured genes are not your destiny”. This is because most genetic tests do not measure all genes, meaning even if one gene suggests a high risk for obesity, there may be other few genes which lower risk but were not measured, or are not yet fully understood.

(Continued on page 13)
References


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Ashley Vargas, PhD, MPH, RDN is a molecular epidemiologist and program director in NICHD's Pediatric Growth and Nutrition Branch. Her clinical and research experience focuses on improving the precision of nutrition risk assessment and the application of nutrition therapy to individuals across their lifespan. Specifically, she has concentrated her research on the relationship between diet and disease that is mediated by the genome and the microbiome in large human cohorts.

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Pediatric feeding disorders include a complex spectrum of eating and nutritional concerns frequently observed in children. Historically, pediatric feeding disorders have been broadly conceptualized and categorized, creating diagnostic confusion and a tendency to oversimplify contributing factors. Recently, Goday and colleagues proposed a comprehensive definition for pediatric feeding disorders as well as a framework for incorporation of psychosocial factors and medical/nutritional components.1 Pediatric feeding disorders are defined as “impaired oral intake that is not age-appropriate, and is associated with medical, nutritional, feeding skill, and/or psychosocial dysfunction.”1 The inclusion of psychosocial factors is a positive step forward in recognizing the complex interplay of mental, behavioral, social, and environmental factors, even in cases of feeding disorders that are largely due to medical issues. These factors may influence the development of a formal feeding disorder as well as contribute to its continuation.

While definitions of feeding disorders have varied over the years, there has been a strong consensus among experts that the “gold standard” approach for evaluation and treatment should be multidisciplinary. Individual facets of pediatric feeding disorders that must be considered include largely gastrointestinal medical conditions, nutritional compromise, and oral motor deficits that would typically be addressed by the gastroenterologist, dietitian, and speech language pathologist respectively.2 Many multidisciplinary programs also include occupational therapists to evaluate self-feeding and the presence of any sensory issues affecting feeding, and psychologists or other mental health providers for input on psychosocial factors.

The new conceptualization for pediatric feeding disorders stipulates that eating disorders such as anorexia nervosa, pica, and rumination should be delineated as separate comorbid conditions.1 Pediatric obesity, however, is notably overlooked or dismissed as a possible comorbid condition of a pediatric feeding disorder. Revisiting the relationship between feeding disorders and obesity is recommended due to the recent redefinition of pediatric feeding disorders. Benton et al reported a prevalence of 5.9 percent in their broadly defined outpatient feeding clinic referral population.11 None of these obese children possessed deficits in oral motor skills, such as chewing and swallowing difficulties that are typically represented in a feeding disorder population and predispose them to inadequate caloric intake and poor weight gain. Therefore, the remainder of this review will focus on children with picky eating and sensory-based feeding disorder who particularly may be at greatest risk for overnutrition and obesity.

Risk of Obesity

Obesity accounts for roughly 186,000 excess deaths per year.3 The cost in medical care of obesity in the U.S. is $147 billion per year.4 Annual obesity-related productivity costs are estimated to be between $3.3 billion and $6.38 billion.5 During the past couple of decades, the obesity rate has risen dramatically. In 1999-2000, 64% of U.S. adults were overweight, a sizable jump from 56% in earlier surveys for 1988-1994. Moreover, 42.4% of adults were obese in 2017-2018, compared to 23% in earlier surveys.6,7 The prevalence of obesity has also increased in the pediatric population. In children aged 2 through 19 years, 28.8% were overweight during 1999-2000 while 35.1% were overweight in 2015-2016.8 There is no single underlying cause or solution for obesity in America; evidence suggests that obesity arises from a combination of genetic and environmental variables.9 Similarly, there is no single solution to the obesity epidemic.10 Therefore, it is necessary to understand all possible factors contributing to childhood obesity, including those that may arise from pediatric feeding disorders.

Currently, data are sparse regarding the prevalence of obesity in pediatric feeding disorders. Benton et al reported a prevalence of 5.9 percent in their broadly defined outpatient feeding clinic referral population.11 None of these obese children possessed deficits in oral motor skills, such as chewing and swallowing difficulties that are typically represented in a feeding disorder population and predispose them to inadequate caloric intake and poor weight gain. Therefore, the remainder of this review will focus on children with picky eating and sensory-based feeding disorder who particularly may be at greatest risk for overnutrition and obesity.

Picky Eating

Picky eating, also known as neophobia, refers to children who exhibit very strong food preferences, accept only a narrow selection of foods, (Continued on page 15)
and show an unwillingness and/or extreme anxiety about trying any new foods. Interestingly, while overall food variety may vary between picky eaters and non-picky eaters, their food preferences do not. Picky eaters typically prefer fries, chicken nuggets, crackers, ice cream, and pizza, while children with typical eating habits prefer many of the same foods (fries, pizza, nuggets) as well as pasta and rice. Therefore, it may be the quantity of intake of these foods (versus quality) as the major contributing factor to childhood obesity.

The relationship between picky eating and obesity has been explored previously in several studies yet has not yielded robust findings. A recent longitudinal study compared the growth trajectories of children identified with different degrees of picky eating at 3 years of age. Children classified as somewhat picky and very picky were not found to be at any higher risk for obesity than the children who were not picky at ages 7 through 17 years. In fact, some of the children who were identified as “very picky” were found to be thin at multiple age points, more so than the non-picky children. Another large study out of Finland found that being a picky eater placed pre-adolescents at higher risk for being underweight but not overweight.

These studies seem to negate the concern for picky eating leading to higher risk for obesity, but it is important to consider that many studies have used different definitions and criteria for classification and identification of picky eating. A systematic review of 41 studies conducted by Brown et al. noted large variations in how picky eating and food neophobia were defined. Aside from a trend towards being underweight in some studies, no clear association between obesity and picky eating was determined.

While there is a lack of evidence for the association between picky eating and obesity, this is likely due to the variability of children’s characteristics and diagnoses as included in studies. It is possible that some children labelled as picky eaters may carry a higher risk of becoming obese. Based on available literature, possible at-risk subtypes include: 1) those with contributory sensory profiles; 2) those exhibiting maladaptive eating behaviors and patterns; and 3) those with autism spectrum disorder. A combination of these subtypes would enhance obesity risk.

**Sensory-Based Feeding Aversions**

Sensory-based feeding aversions occur widely in pediatric feeding disorders. Sensory integration describes the interrelationship between the individual’s environment and his or her senses. Individuals of all ages rely upon sensory integration to perform routine daily activities including such basic tasks as bathing, dressing, and brushing one’s teeth. Individuals with impairment in sensory integration or sensory processing disorder may demonstrate features of over-responsiveness, under-responsiveness, sensory-seeking, and sensory-avoidant behavior. Expressions of over-responsiveness include distress from light touch and the feeling of agitation from clothing tags or seams. A common example of sensory under-responsiveness is having diminished recognition of touch or temperature change. A common example of sensory seeking is craving sensory input in the form of spinning or deep touch. Sensory avoidance may manifest in behaviors such as covering of ears for loud noises or refusing to walk barefoot on sand or grass.

Children with sensory-based feeding aversion tend to eat foods with appealing sensory qualities and avoid foods based upon perceived unfavorable sensory qualities. For example, many children show sensitivities to specific food textures, smells, and tastes, and may even react to the temperatures of different foods. Tactile sensitivity, which includes oral tactile issues, has been found to be strongly associated with picky eating. Children with various sensory aversions may gag and vomit with new foods. They may prefer liquids over solids. Contrarily, children with under-responsiveness possess less awareness of sensory input, and require more stimulation in order to respond. These children may prefer foods offering higher sensory input, such as crunchy foods, spicy foods, foods with strong odors, and foods that are served at hot or cold temperatures. Both sensory profiles, through distinct and separate mechanisms, may increase risk for obesity. In conjunction, heavy reliance on liquids may also be a pitfall for weight gain, particularly if consuming large quantities of unhealthy beverages. Children with oral sensory sensitivities also tend to avoid lower calorie foods such as fruits and vegetables due to their unfavorable sensation and taste. Lastly, both groups of children may be drawn to high-fat and high-sugar foods that have very pleasing sensory properties. Strong sensory preferences about foods may contribute or lead to maladaptive eating behaviors, particularly if left unheeded.

Children with sensory regulation challenges may also develop maladaptive and obesogenic feeding behaviors. Sensory regulation refers to an individual’s ability to monitor and manage states of arousal, emotions, thoughts, and behaviors in ways that support adaptive responses. Self-regulation skills are needed so that one can maintain attention, control our bodies, manage our emotions, and respond to internal cues such as hunger, fatigue, and pain. When self-regulation skills are poor, impact on eating behaviors can include a tendency to eat foods too quickly, over-stuffing while eating, and not recognizing cues for satiety. In a study of 7-12 year-olds conducted by Webber et al., children who exhibited appetitive tendencies such as eating for emotional reasons, eating very quickly, and having a high desire to drink liquids were more likely to be overweight or obese. These findings suggest a possible connection between eating behaviors and emotion regulation in children, although more research is needed to extrapolate on these findings. In a recent study conducted by Hebert, food intake and sensory sensitivity were examined in adult women. They found that women with high sensory sensitivity displayed higher rates of eating in response to both emotional and external food cues, suggesting that being highly reactive to sensory input may be related to a tendency to regulate emotions differently and/or to use different strategies to respond to emotions (e.g., over-eating). Similarly, in another study, adult women with high sensitivity ate more offered chocolate than their counterparts with low sensitivity. Thus, underlying appetite traits may increase the risk for overeating, especially in individuals who have sensory issues, difficulties with self-regulation, and/or picky eating habits.

**Autism Spectrum Disorders**

Children diagnosed with autism spectrum disorders demonstrate food neophobia and selectivity at high rates, and this population also has a high rate of obesity. Individuals with autism who are at highest risk for becoming overweight and obese are those with autism severity in the moderate to severe range. Some of the contributory factors to high overweight and obesity in children with autism include lifestyle variables such as tendency to spend more time in sedentary activities (Continued on page 16)
and less time doing physical activity, and the increased likelihood of being prescribed medications that cause weight gain.29-36 Picky eating is also extremely common in children with autism. Many foods preferred by children with autism are pre-packaged, sugary and salty snack foods, and other highly processed foods.37-39 These calorically-dense foods may hold appeal as their sensory properties are very consistent, and the packaging may be visually reassuring to children with autism who may not easily trust foods that are less familiar. An additional risk factor for children with autism is that they are described as having a strong appetite by their parents whereas many non-autistic children with picky eating display a poor appetite, making them less likely to become overweight.40,41

Lastly, it is important to consider the frequent use of food as a reward/incentive in certain treatment protocols for children with autism. Using food as a reward during therapies provides an iatrogenic pathway by which obesity risk becomes heightened for children who may already be predisposed. Applied behavioral analysis (ABA) therapy has been heavily researched and found to be one of the most effective treatment strategies for children with autism. It involves use of immediate rewards to reinforce behaviors that approach a target skill. Children practice these skills repeatedly until they master them. Some children receive as many as 40 hours a week of ABA therapy. Food rewards are common, but caution should be used sparingly and paired with other non-food rewards in order to avoid over-reliance.42 Use of food rewards disrupts the normal process of recognizing hunger and satiety cues, and they encourage a child to eat at non-mealtimes. Additionally, many of the foods that serve as rewards are high-calorie, high-sugar and foods dense in carbohydrates.43 With repeated exposure to these types of foods, children will quickly develop a taste for them and begin to regard them as highly desirable. It has been demonstrated that children, when given the opportunity, will overeat foods that have been used as a reward in the past.44,45

**Conclusion**

In summary, research to date has not shown a strong and/or consistent link between picky eating and pediatric obesity. However, studies have varied considerably in how they have defined and studied picky eating. For some children, picky eating appears to serve as a protective factor, making them less likely to become obese. However, there may be additional subsets of children and/or risk factors that may increase the likelihood that picky eating will lead to weight gain. Children who exhibit strong sensory preferences about food choices may be at higher risk (e.g., preferring crunchy foods, foods with high salt and sugar content, fried foods, and highly processed foods). There is also growing evidence that a desire to drink large amounts of liquids may also be a risk factor, depending on the caloric content of preferred drinks. Children who are picky and who also exhibit tendencies such as eating very rapidly, showing less awareness of satiety cues, and an increased tendency to eat for emotional reasons may also be high-risk. Lastly, picky eating in children with autism represents a very important subgroup of children who should be closely followed as they are likely to represent a “perfect storm” when it comes to their risk level for obesity. In addition to a tendency towards a strong appetite, preference for high-calorie foods, sedentary life-style, maladaptive behaviors, and sensory processing challenges, many of these children are also exposed to therapies that use foods as a treatment strategy and medications that predispose to weight gain.

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**References**


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Physical Activity and Exercise Considerations for the Beginning Exerciser

By: Joseph Sherman, MS

Regular physical activity is highly beneficial for overall health,¹-³ and is a vital tool for weight management.⁴-⁹ However, overweight (BMI 25-29.9 kg/m²) and obesity (BMI > 30.0 kg/m²) and those who are new to exercise require special considerations for safe, yet effective, exercise recommendations. When promoting exercise to clients, physical limitations, body dissatisfaction and low exercise efficacy must be considered.¹⁰-¹² Proper preparation at the onset of an exercise program can assist clients in long-term adoption which, in turn, can improve overall health, increase quality of life, and potentially reduce healthcare costs associated with overweight and obesity.

Physical Activity Recommendations and Weight Loss

The recently released Physical Activity Guidelines for Americans, 2nd edition continues to highlight the importance of moderate-vigorous physical activity (MVPA) for weight loss and the prevention of weight regain.¹³ Specifically, for weight loss, Donnelly et al.⁴ found that to achieve clinically significant weight loss (>3%), individuals must perform between 225 and 420 minutes of MVPA each week, with an apparent dose-response effect. Several studies have found increased MVPA alone results in clinically significant weight loss.¹⁵ The goal for clients at the onset of a physical activity program should be encouragement to increase activity level in a consistent and safe manner.

The Physical Activity Guidelines for Americans recommends at least two days per week of muscle-strengthening activities involving all major muscle groups.¹⁴ Resistance training may not promote weight loss when used alone,¹⁵ but improves retention of lean muscle (e.g., muscle mass) when used in conjunction with calorie restriction and/or aerobic exercise.¹⁶-¹⁸

A multicomponent program including regular MVPA combined with caloric restriction may be more successful in promoting weight loss.⁵-⁷,¹⁸ In a review of 41 randomized clinical trials, Shaw et al.¹⁷ found that exercise alone marginally improved weight loss, but when combined with dietary interventions, weight loss significantly increased (~1 kg). Interestingly enough, they found similar weight loss between light (e.g., calisthenics, stretching) and moderate activities (e.g., brisk walking, stationary cycling) as compared to vigorous intensity activities (e.g., jogging/running, interval training) when combined with calorie restriction. Therefore, prescribing a program including an increase in regular aerobic exercise in conjunction with dietary intervention offers clients the best chance at weight loss and improvements to overall health.

Exercise Considerations for Clients with Overweight and Obesity

Proper planning and preparation at the onset of an exercise program can set clients up for success and improve the chances of long-term adoption. Clients who are new to exercise face unique challenges when beginning a program: lack of exercise self-efficacy; intimidation from taking up a new activity; and embarrassment all compound on the potential physical limitations.

First, have the client brainstorm activities they feel proficient at performing. List off a few examples (walking, cycling, swimming, resistance training) to point them in the right direction. Focus on activities the client mentions they enjoy or have performed in the past and highlight the benefits of each (e.g., walking is the easiest and least expensive form or exercise, cycling is low impact and provides the opportunity to exercise with others). As they are beginning their exercise journey, it is important to have clients participate in activities they feel confident in to build exercise efficacy and a sense of accomplishment.

A client’s current activity level will determine the volume of physical activity per week they should attempt to achieve at the onset of a program. Examples of progressions for aerobic (Table 1) and resistance exercise (Table 2) are provided. To use the table, determine the current activity level of the client and find the appropriate prescription for physical activity. For example, a client who is not currently physically active should begin with “Week 1” whereas a client who is exercising ~90

(Continued on page 19)
minutes per week should progress to “Week 4”. Increasing volume by 10-20% each week until the client achieves the recommended amount will prevent undue soreness and increase the likelihood of long-term adoption. Each client will reach a different level of weekly physical activity, so it is important to provide encouragement regardless of the volume achieved. Highlighting successes, no matter how small, is of the utmost importance to a beginning exerciser. Providing immediate feedback through weekly check-ins provides clients with much-needed encouragement as well as reassurance they are on the right track. As the client becomes more comfortable with exercise, you can begin increasing intensity and adding additional modalities. A good rule of thumb is to adjust one aspect of an exercise program every 4-6 weeks. Ideas for adjusting an exercise routine can be found in Figures 1 and 2.

Physical changes with exercise may be difficult for clients to discern. At the onset of an exercise program it is much more likely clients will experience psychological changes, such as improved mood, increased sleep quality, and stress level reduction. Have the client keep a journal or log of their exercise sessions highlighting how they felt before the session, the activity and duration performed, and how they felt after the session. Over time, the journal will allow for pairing the positive psychological effects of exercise with the physical adaptations.

Ensuring clients who are less comfortable with exercise are free from embarrassment and discomfort is especially important at the beginning of an exercise program. Not all exercise equipment is suitable for every client. For example, weight machines may place clients in an uncomfortable position that will cause an adverse reaction to the exercise. Before prescribing a piece of equipment ensure that it is suitable for the individual. High impact exercises, such as running, jumping, stair stepping, and plyometrics, should be avoided in those new to exercise or who are not conditioned for repetitive, high-impact movement due to increased stress on joints which can lead to discomfort, or even injury. Other considerations for the beginning exerciser or exerciser with overweight/obesity:

- Wear loose-fitting clothing (e.g., T-shirts, sport shorts, sweat pants).
- Proper footwear with good arch support; most running stores will perform a free gait analysis to determine which type of shoe works best for the client.
- Using music, podcasts or books during exercise will provide positive reinforcement to increase adherence.

### Conclusion
Understanding and acknowledging the unique challenges each client presents and incorporating modifications into a prescription can improve long-term adoption of a regular physical activity program. While the ultimate goal is to have each client reach the recommended amounts of weekly MVPA and resistance exercise, it is important to progress them in a safe manner. Encouragement, feedback, and thoughtful progression enhance the experience for the client.
Reference

2. Hills AP, Street SJ, Byrne, NM. Physical activity and health: “what is old is new again”. In Adv Food Nutr Res. 2015;75:77-95.

Figure 2

Resistance Exercise Modalities

<table>
<thead>
<tr>
<th>Beginner (Bodyweight)</th>
<th>Intermediate (Weight Machine)</th>
<th>Advanced (Free Weights)</th>
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<tbody>
<tr>
<td>Modified Push-up</td>
<td>Chest Press</td>
<td>Bench Press</td>
</tr>
<tr>
<td>Supine Push-up</td>
<td>Lat Pulldown</td>
<td>Pullups</td>
</tr>
<tr>
<td>Arm Circles</td>
<td>Shoulder Press</td>
<td>DB Lateral Raise</td>
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<tr>
<td>Cable Curls</td>
<td>Machine Curls</td>
<td>Chin Ups</td>
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<tr>
<td>Chair Dips</td>
<td>Triceps Pressdowns</td>
<td>Triceps Dips</td>
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<tr>
<td>Low Plank</td>
<td>Exercise Ball Crunches</td>
<td>Leg Lifts</td>
</tr>
<tr>
<td>Chair Squats</td>
<td>Knee Extensions</td>
<td>Kettlebell Squats</td>
</tr>
<tr>
<td>Hip Bridges</td>
<td>Leg Curls</td>
<td>Stiff-leg Deadlifts</td>
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Table 2

<table>
<thead>
<tr>
<th>Days</th>
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<td>Weeks 9-10</td>
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<td>10</td>
</tr>
<tr>
<td>Weeks 11-12</td>
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</tbody>
</table>

Joseph Sherman, MS is a Senior Research Coordinator in Kansas City. He completed undergraduate and graduate training at Missouri State University. Currently, he works for the Division of Physical Activity and Weight Management at the University of Kansas Medical Center. He specializes in physical activity modifications, lab-based exercise testing and behavioral health interventions for special populations including individuals with intellectual, developmental and physical disabilities.
Body Composition Assessment in Bariatric Surgery

By: Kim B Knopp, MS, RD, LD

Ideally, weight loss following bariatric surgery should be primarily from fat mass, minimizing lean mass loss.1 The bariatric team’s dietitian tracked patients’ body composition outcomes for more than 10 years. Observed clinical trends were then published as preliminary gender-specific Percent Body Fat (%BF) and lean mass sparing goals following Roux-en-Y Gastric Bypass (RYGB) and Sleeve Gastrectomy (SG).2,3 To help equip the RDN in bariatric surgery to consider incorporating this assessment into clinical practice, this article shares those two studies’ major goals and findings as well as the tools and evidence-based practices used to achieve outcomes.2,3 It also discusses the benefits that body composition evaluation offers to patients and RDNs and the impact of preoperative weight loss approaches on body composition.

Published Goals and Findings

Twelve-month outcomes showed that body composition for men and women in both surgeries successfully transitioned below the World Health Organization (WHO) obesity thresholds of >25%BF for men and >35% for women.2,4 These outcomes, then, suggest it is possible to consider application of those WHO body composition obesity thresholds to create patient potential 12-month %BF goals as ≤25% for men and ≤35% for women following both surgeries.2 Additionally, lean mass sparing goals were suggested as Percent Lean Lost (%Lean Lost), the ratio of lean mass loss to total weight loss; %Lean Lost was the single variable whose postoperative changes were not significant for women following both surgeries or for RYGB men.2,3 Achievable results suggested a %Lean Lost goal applicable at all points of measure during the first postsurgical year as ≤25%Lean Lost for RYGB and SG women, and as ≤33%Lean Lost for RYGB men (i.e., ≥75% of weight loss was attributable as fat mass loss for women, and ≥66% for RYGB men).2 The %Lean Lost goal of <33% was also applicable to SG men, but only as a 12-month goal because while values improved, they did change significantly throughout the first postoperative year.2 For both genders following both surgeries, then, the majority of weight loss was due to fat mass loss while sparing lean mass 2,3; awareness of this potential encourages and empowers patients who have struggled with weight loss, and the outcomes themselves are important given the recognized health risk of excessive fat mass and benefits of maintaining lean mass.2,5,6 Characteristics of studies’ variables also indicated that evaluating weight and body composition following both surgeries should optimally be gender-specific.2,5

Tools and Evidence-Based Practices

Body composition was evaluated on initial visit, when surgery was scheduled once preoperative weight loss goals were met, at required 3, 6, and 12-month visits, at the optional 9-month visit, annually, and as clinically indicated. This serial analysis equipped the practitioner to define weight loss and personalize patient care by coordinating progress with macronutrient intake.2,10 It also provided the opportunity to intervene throughout the critical first postoperative year by modifying exercise to improve fat mass loss and/or lean mass sparing.11 This coordination of outcomes with clinical care strengthened authority of RDN recommendations.

As part of each patient’s surgical weight loss journey, the team dietitian provided an education tool. The tool was a %BF graph printed with each body composition evaluation that included a mini-spreadsheet of weight and body composition changes (Figure 1)—essential and tangible feedback as patients worked toward %BF and %Lean Lost goals.3 The %BF graph and spreadsheet were created using a Microsoft EXCEL® program, however it would currently be more practical to incorporate this tool into the electronic medical record. As another education tool, the team dietitian used a 5-pound body fat replica to both help patients visualize the dramatic amount of fat lost after surgery and to validate their progress. For example, the patient represented in Figure 1 lost 60 pounds of body fat one year after surgery. This was demonstrated to her as the equivalent of twelve of the 5-pound body fat replicas. The specificity of body composition evaluation itself also serves as a patient education tool with its ability to clarify whether or not a lack of weight loss progress is masked by the desirable outcome of fat mass loss coupled with lean mass gain—an important distinction to this patient population.

Patients are active participants in bariatric teams. On program entry, patients were encouraged to adopt healthy food choices and eating patterns and to regularly exercise not only to accomplish designated

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preoperative weight loss goals, but also to equip them to optimize their postsurgical weight loss and body composition outcomes. To successfully accomplish those changes, patients were encouraged to put some thought and effort into meal planning. Recommendations both before and after surgery included whole food choices of lean meat, fish and poultry, fresh vegetables and fruits, whole grains, legumes, and skim or low fat milk–choices which are nutrient-rich and enhance satiety while reducing energy intake, maintaining palatability, and limiting the potentially addictive properties of processed additives.12-14 Small amounts of healthy fats were encouraged at mealtime to enhance satiety and meet nutritional needs, but overall intake of all fat was limited to control calories.12-14 Pre-surgically, patients were also encouraged to chew thoroughly and eat slowly in order to search for and perceive satiety as well as promote postsurgical meal tolerance. To help meet postoperative macronutrient needs, maximize micro-nutrient intake, and enhance satiety, patients were encouraged to eat three meals daily and to include a lean protein food with each meal, especially important with postsurgical reduced gastric capacity.9,10,14 “Dish Up a Healthy Meal” tear-pad handouts were provided and discussed as a preoperative education tool to assist with meal planning and healthy food choices.15 Strategies to budget for these foods were also incorporated into patient education.

Meal planning to enhance satiety was part of the strategy to discourage mindless between-meal grazing, capable of sabotaging pre- and postsurgical weight loss. However, a between-meal snack was planned if needed to fuel postoperative physical activity or to help avoid becoming overly hungry if anticipated meals were to be >6 hours apart.16 Pre-surgically, patients were encouraged to drink 2-3 cups of milk daily. Two to three cups of milk were also encouraged as fluid choices between meals after surgery to contribute toward patients’ general daily protein and carbohydrate needs, to contribute electrolytes, and to help provide satiety and fuel physical activity.5,10,16 Surprisingly, postsurgical lactose intolerance was seldom an issue, but the RDN was available to suggest alternatives as needed.

### Preoperative Weight Loss Approaches

The impact of preoperative weight loss approaches on body composition should also be considered. From program initiation to time of surgery, the healthy eating and exercise encouraged in our practice helped patients reduce their %BF so that body fat represented the majority of accomplished preoperative weight loss. Results from a study in which men with obesity followed an 8-week preoperative Mediterranean protein-enriched diet showed a highly significant decrease in weight, liver size, visceral fat, and fat mass with no significant reduction in lean mass.17 In contrast, an Optifast® regimen instituted 2 weeks prior to surgery produced significant loss of weight and fat mass, and a significant lean mass loss which represented 62% of total weight loss.6 Among the disadvantages of lean mass loss is its association with weight regain.5

### Call to Action

Routinely utilizing body composition assessment offered invaluable coordination with clinical care and served as a powerful education tool. These suggested body composition guidelines following RYGB and SG helped to fill a gap in evidence-based practice and provided a reference to guide patients toward the goal of losing predominantly fat while sparing lean mass. While more research is needed to solidify these preliminary guidelines into definitive goals, RDNs are encouraged to apply this approach demonstrated to benefit both patients and practitioners.

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**Spreadsheet to Accompany % Body Fat Graph**

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<th>Weight Loss</th>
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<th>Body Fat</th>
<th>Fat Loss</th>
<th>Lean</th>
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<td>20</td>
<td>81</td>
<td>101</td>
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References


Resolutions the Right Way

By: Susan Sullivan, RDN, LD

Did you know that the custom of celebrating New Year’s Day and setting resolutions began some four thousand years ago? Historically speaking, the tradition has evolved, but the concept is still relatively the same. People look forward to the new year as a time for growth and change, expanding upon or implementing positive behaviors. It should come as no surprise that as gym memberships surge in January, people also begin examining their diet. It is not uncommon for a Registered Dietitian Nutritionist (RDN), settled in the world of nutrition counseling, to have clients expect their RDN to provide input on their new year’s resolutions, especially as they pertain to food. As professionals and nutrition experts, it’s every RDN’s responsibility to offer guidance and support while helping the individual set an appropriate resolution or goal for themselves.

How Effective Goal Setting Motivates our Clients

Scientists believe that the process of setting specific goals serves “as a subconscious primer for the execution of goals.” 1 Priming is thought to increase the chances of acting on a goal by increasing motivation, focus and commitment. 1 Theoretically, we make more of an effort to achieve a goal when we visualize success and challenge ourselves to plan effectively and thoroughly. Furthermore, if we discuss our goals with an accountability partner, for example, a client discussing their new year’s resolution with their RDN, there’s most likely an added element of determination. An accountability partner helps maximize personal accountability and motivation by offering feedback and input. 2 For anyone that has attempted a five o’clock morning workout, it’s much easier to get out of bed when you’ve committed to attending with a friend.

Setting SMART Goals in 2021

An established technique for setting actionable goals is the “SMART” framework. SMART goals are Specific, Measurable, Attainable, Realistic and Time-bound. These consist of practical, concrete actions that are intended to improve knowledge, skills, attitudes and outcomes. 3 Interestingly, the SMART goal concept was developed by business professionals in the 1980s. Success with determining and communicating objectives, along with a catchy acronym, supported its spread to the counseling and self-help industry. 3 Gone are the days of generic goal setting. Instead of a simple, “I will eat better” statement, a SMART healthy eating goal is, “On Sundays, I will create a balanced weekly meal plan that features three meals each day, five servings of fruits and vegetables each day, and a source of protein with each meal and snack.” Specific, measurable, attainable, realistic, and time-bound, making it a quality New Year’s resolution for a nutrition-focused client.

Effective Counseling Strategies for the RDN

The Academy of Nutrition and Dietetics believes a variety of counseling strategies from different behavior change theories should be utilized when assessing a client’s motivation, readiness, and self-efficacy for lifestyle intervention. Theories and models include Cognitive Behavioral Therapy, the Transtheoretical Model, and the Social Cognitive Theory/Social Learning Theory. 4 Cognitive Behavioral Therapy (CBT) is a type of talk therapy that allows a client to become aware of inaccurate or negative thinking, in hopes that they will view challenging situations more clearly and respond to them more effectively. An example of CBT during nutrition counseling is discussing a client’s busy working day, where they usually skip meals or order out, then suggesting realistic strategies to incorporate regular meals and avoid convenience foods. The Transtheoretical Model (TTM) or Stages of Change model assesses a client’s readiness to incorporate regular meals and avoid convenience foods. The Transtheoretical Model (TTM) or Stages of Change model assesses a client’s readiness to develop and act on health behavior interventions. 5 Stages are as follows, pre-contemplation, contemplation, preparation, action, maintenance, and relapse. Correctly identifying a client’s “stage” is crucial to leading a successful session. For example, a client with uncontrolled diabetes, in the precontemplation stage, unaware of the potential health risks associated with their condition and no intent to change their behaviors in the foreseeable future, is likely to need more education and a discussion on the possible benefits of a carbohydrate-controlled diet prior to setting SMART goals. Whereas a client with heart disease, status post bypass surgery, in the action stage, that has begun exercising and has researched DASH and the Mediterranean diet, may be more motivated and receptive to nutrition counseling and goal setting. The Social Cognitive Theory (SCT) or the Social Learning Theory proposes that personal factors,
environmental factors, and behaviors continuously interact through influencing and being influenced by each other. A client’s eating behaviors may be dictated by the fact that they live in a food desert. Thus, an experienced RDN would research grocery stores, farmers’ markets, roadside stands, and food assistance programs within a reasonable distance versus providing the client with a rigid meal plan. Learning a client’s negative thoughts, assessing their stage of change and discussing potential barriers, like a food desert, can be done through Motivational Interviewing (MI). MI is a collaborative, goal-oriented method of communication between an RDN, or other practitioner, and client. Thought provoking questions from the RDN encourages a client to express their personal motives and answer their own questions."What’s your favorite meal to cook and why?" lends itself to much more of a discussion than, “Do you cook dinner every night?”

Conclusion
The season of change is upon us. Traditionally, January is a time of increased focus on lifestyle behaviors. An RDN can be certain they will be approached by clients and asked to provide insight on diet-related goals and New Year’s resolutions. There is no singular method to offer effective guidance. During this time, an RDN should focus on building motivation and confidence with the assistance of the following tools: teaching SMART goals, assessing client’s hopes and fears with CBT, TTM and SCT, and utilizing MI techniques. Following a client and individualizing care may be the key to sustaining change. Happy counseling to all in the new year!

References

Susan Sullivan, RDN, LD is a graduate of the Food Science and Human Nutrition program at Clemson University. She completed her dietetic internship at sites in both Augusta, GA and Columbia, SC. Since then she has provided medical nutrition therapy in the hospital setting, and has worked as a nutrition educator and counselor in outpatient clinics, including a bariatric center. Her passion is helping clients achieve their health and nutrition-related goals, especially in regards to weight loss and disease management, which she does now for Carolina Nutrition Consultants, LLC located in Lexington, SC.
Holiday Greetings to everyone and many hopes and wishes that 2021 will allow us to return to some form of normalcy. Perhaps we will be able to retire our masks for good!!

Weight Management leadership will proceed through these challenging months with projects and programs to broaden the skills and knowledge of our members. To update you on several of these opportunities, let me begin with the webinar showcasing our stipend recipients. This is slated for January 13, 2021 from 6:00 – 7:00 pm CST. The recipients are:

- Matthew Landry, PhD
- Domonique Christian, MS
- Jaime J. Larese, MS, RDN, LN
- Samantha Lalush, RD
- Kelly West Keyser, MS, RD, LD, CDE
- Ingrid Hill, MS, RDN, CSOWM

During this hour, they will discuss the motivations, methods, and mentors which have helped them find joy, meaning, and impact in their professional practice. They will also talk about the impact of WM DPG membership and leadership roles which have helped shape their careers.

Look for the announcement of this webinar in upcoming eblasts and register for this fascinating program on the professional lives of these members.

Our Weight Management Virtual Symposium “Weighing the Evidence, Solutions for Success” is coming in April 2021. Registration for the symposium will begin in January 2021. Three sessions are scheduled for each day, April 1 and April 8, so save the dates. The Symposium committee asked prospective speakers to submit program proposals based on the following topic areas:

- Medical consequences of obesity
- WM and improved disease outcomes for the medically complex patient: Obesity, DM, HTN, CVD, CKD
- Building a business/telehealth/social media
- Tailoring WM for diverse populations
- Obesity prevention/achieving a healthy lifestyle/relationship with food
- Long term outcomes for bariatric patients

The Professional Development team has organized the following webinars for your continued educational interest over the next few months:

- “Confused by the Headlines: Can You Spot the Science” with speakers Connie Diekman, M.Ed, RD and Tracy Oliver, PhD, RDN.
  Date: January 19, 2021 @ 12 pm EST.
- “Supplements in Bariatrics” with speaker Heather Mackie, MS, RD.
  Date: February 23, 2021 @ 1 pm EST.
- “Exercise as Medicine Toolbox” with speaker Julie Schwartz, M.S., RDN.
  Date: March 10, 2021 @ 12 pm EST.

During the summer and fall, Weight Management took steps to reactivate its Diversity Liaison (DI) position within the Leadership team. The Chairs are proud to announce Cicely Thomas, M.Ed, RDN, LD, has accepted the invitation to become our DI. She is currently pursuing a Doctorate in Clinical Nutrition at the University of North Florida. Cicely is the Northwest Georgia WIC Service Nutrition Services Director and serves as the nutrition section president for the Georgia Public Health Association. Her role within WM DPG will include conducting diversity outreach events to promote the profession to diverse individuals and/or increase cultural competency of current practitioners. Recently a Diversity Inclusion and Equity Survey was sent to members for their input on several questions regarding diversity and 264 members completed it. An overview of the responses and results will be posted to members in the future. Thank you for your participation in this survey.

Until next time, stay safe, wear your mask and when available, get vaccinated!

By: Becky Reeves, DrPH, RDN, FAND

Greetings to all, and I hope everyone is staying healthy. One of my gigs is as a consultant dietitian for skilled nursing/long-term care. COVID-19 has hit this population extremely hard. It is sobering to observe the clinical sequelae of this disease. My heart goes out to anyone who has suffered through this disease. Please, follow the guidelines for physical distancing, mask-wearing, and consider the vaccination if it’s offered to you. I hope to get mine before the end of this year.

We have a somewhat hefty issue for you this quarter. Our section editors are working diligently to create up-to-date content for you to use right now in your practice. When you have a moment, please consider giving them a quick “thanks” to let them know your appreciation.

We will have two more newsletter issues for this membership year. If you have ideas and recommendations, please be sure to let us know. You can send an email to me at lisa@redrunnercoaching.com or our executive director, Barb Pyper, at wmdpg@quidnunc.net.

Best regards,
Lisa