

An Approach to Nutritional Counseling for Family Physicians: Focusing on Food Choice, Eating Structure, and Food Volume

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INTRODUCTION

Incorporation of nutritional counseling as part of routine medical treatment is more urgent than ever. While the prevalence of obesity¹ and other lifestyle-related disease²⁻⁶ in the United States is increasing, dietary risk factors for children and adults continue to worsen. More than one-third of American children and adolescents (ages 2 to 19 years) consume fast food on any given day, and more than 11% consume more than 45% of their total daily calories from fast food.⁷ Ninety-five percent of Americans older than the age of 2 years exceed the recommended intake of solid fats and added sugars.⁸ Sedentary behaviors are pervasive, and time spent sitting every day is increasing.⁹ Despite our best efforts to diagnose illness early, prescribe medications, and provide appropriate procedures, almost all patients with lifestyle-related conditions like diabetes, obesity, and cardiovascular risk factors and diseases experience worsening illness, which over time leads to functional decline, disability, and premature death. As 1 of 6 lifestyle medicine domains (the others being physical activity, stress management, restorative sleep, avoidance of risky substances, and positive social connections), healthy nutrition is a key area for intervention and is relevant to many patient-provider conversations in primary care.

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Evidence suggests that changing diet and lifestyle can be a powerful intervention. For example, observational studies show that a combination of healthy lifestyle factors is associated with an 80% reduced risk of coronary events,^{10,11} a 50% reduced risk of stroke,^{11,12} and a 90% reduced risk of type 2 diabetes.¹¹ Stringent lifestyle intervention programs have demonstrated weight loss,¹³ regression of atherosclerotic lesions,¹⁴⁻¹⁶ and successful treatment of type 2 diabetes.^{17,18}

And yet, for physicians and advanced practice providers, there appears to be little in the way of a consensus framework for counseling patients on the application of optimal nutrition. Approaches to adopting improved nutrition vary dramatically. Some emphasize continuous daily calorie monitoring and restriction via portion control, without significant restriction on the types of foods that can be consumed. Others focus on timing of eating, including various intermittent fasting regimens. And still others are exemplified by dietary strategies that focus on limiting or avoiding consumption of entire food groups. Examples include the ketogenic diet¹⁹ and a low-fat, vegan diet.²⁰

The purpose of this paper is to propose a simple and practical, unified framework that combines core nutritional behaviors underlying these disparate approaches and applies them to counseling individual patients for beneficial outcomes. The common dieting approaches mentioned previously, in their simplest form, are interesting but are often singularly focused on one aspect of healthy nutrition to the exclusion of others (**TABLE 1**).^{21,22}

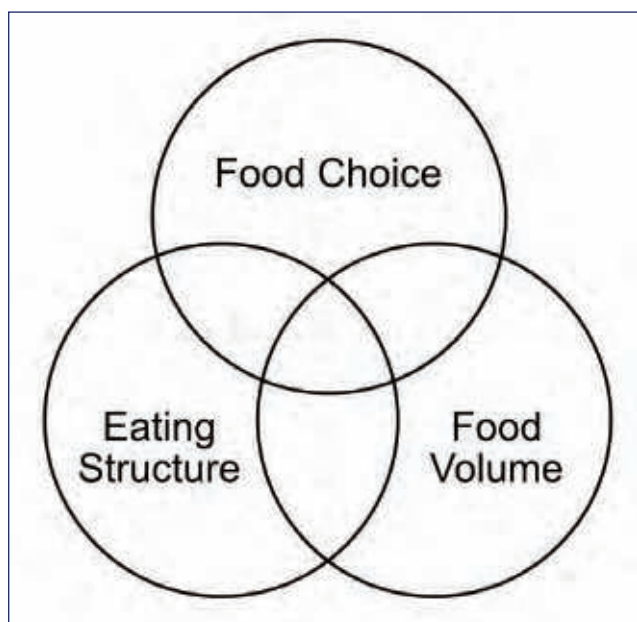
A UNIFIED FRAMEWORK

A unified framework of nutrition application includes 3 distinct, but interrelated, approaches: (1) food choice, (2) eating structure, and (3) food volume (see **FIGURE 1**). Many popular diet approaches focus entirely on 1 component, in part

TABLE 1. Typical nutritional approaches and common limitations^{21,22}

Dietary pattern/diet advice	Limitation
Continuous calorie counting/portion control	Paired with message that no food is “off-limits”; permission given to eat any type of food in the name of “moderation” ²¹
Intermittent fasting	No nutritional advice beyond calorie restriction during certain periods of time ²²
Dietary patterns with food restrictions (keto, vegan)	Lack guidance around changing time of eating or portion sizes

FIGURE 1. The 3 components of optimal nutritional counseling



because following those plans appears to be easier to would-be dieters. In the author’s and colleagues’ clinical experience, though, optimal outcomes require addressing all 3 components. Questions to quickly assess each of these components in a patient evaluation are suggested in TABLE 2. By better assessing behaviors and identifying targets for nutritional changes, family physicians can better counsel patients, particularly when paired with aspects of motivational interviewing and the establishment of SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals.

FOOD CHOICE

Food choice is, very simply, the food that someone chooses to consume. This is the most powerful, and perhaps also the least marketable, component to change, which may be why many popular weight loss programs do not explicitly say to strictly avoid foods, and instead promote messages embracing “everything in moderation.”

Specific health goals (eg, weight loss vs treating atherosclerotic heart disease) may involve slight differences in the emphasis on which foods or dietary patterns may be employed. However, overall dietary recommendations are more similar than different. The American College of Lifestyle Medicine recommends an “eating plan based predominantly on a variety of minimally processed vegetables, fruits, whole grains, legumes, nuts and seeds” for treatment and potential reversal of related illness.²³ This is similar to the recommendations of the American Institute for Cancer Research, which advises eating “a diet rich in whole grains, vegetables, fruits, and beans” with “at least” two-thirds of dietary intake being from plant foods to prevent cancer and maintain a healthier life,²⁴ as well as other professional guidance emphasizing unrefined plant foods.²⁵⁻²⁹

Consistent with these recommendations, but with a focus on weight loss, the concept of energy density, or caloric density, provides a useful structure to optimize food choice. Energy density simply refers to the amount of energy, or calories, in a standard weight or volume of food. FIGURE 2 shows rough approximations of calorie content for various groupings of foods.³⁰

In weight-loss approaches focused on calorie restriction, arguably the greatest barrier to long-term success is increased appetite due to hunger,³¹ which reflects an increase in ghrelin production as weight is lost.³² The biological drive to consume more calories is ultimately too strong to resist for all but a small proportion of people who are trying to lose weight. This is supported by the finding that patients with obesity who use programs principally targeting calorie restriction regain more than 30% of their lost weight at 1 year and 75% of their lost weight within 5 years, on average.³³ Although this finding does not clearly attribute the weight regain to any specific physiologic factor of their weight loss approach, one obvious hypothesis is that a calorie-restriction plan that leads to any degree of chronic hunger is intolerable.³⁴⁻³⁶ Thus, whatever plan people put into place must minimize long-term hunger.

Choosing foods lower in energy density and higher in bulk, fiber, and water may reduce hunger by blunting an increase in ghrelin. In a single-meal study, a high-carbohy-

TABLE 2. **Examples of assessing behaviors and targeting nutritional changes for a patient likely to be consuming excess calories**

Questions	Rationale	Possible behavioral targets (discussed with motivational interviewing style)
Food choice		
24-hour food recall: What did you eat for dinner, lunch, and breakfast yesterday?	A food recall provides a more realistic picture than having a patient volunteer what they “usually” eat, which may be colored as much by intentions as by actual choices.	Target misinformation about what foods to avoid and what foods to enjoy, using calorie density framework. (For example, a patient may think that brown rice is problematic but that cheeseburgers are fine.) Explore ways a patient may want to change food choice.
Eating structure		
Did you have any snacks in the afternoon before dinner?	Understand if the patient consumes excess calories from snacking.	Discuss approaches to having regular meals and minimizing snacking on unhealthy foods.
Did you eat any food after dinner last night?	Understand timing of food choices to understand contributing factors (eg, emotional influence, work schedule).	Explore what would need to change to address barriers relating to schedule.
Do you eat with other people in your house?	Understand influence of others living with the patient.	Discuss conversations about health goals and dietary changes with significant others.
Food volume		
Do you ever eat what would be commonly recognized as an excessive amount of food in a short period of time? Do you eat past fullness? Do you ever feel like you lose control of eating during these times, and then feel ashamed or guilty? Have you ever counted calories, and if so, do you know how many calories you are eating? Are there times of day you are regularly hungry?	Identify binge eating behaviors. Since many people struggling with weight have done weight-loss plans involving counting calories, some people have some understanding of their average calorie intake. Understand whether some meals may be too large and others may be too small, if they are routinely hungry at certain parts of the day.	Consider referral to therapy involving a professional experienced in treating disordered eating and related emotional concerns. Consider tracking intake with a popular program (eg, MyFitnessPal, Loselt, FatSecret, Chronometer). Problem-solve ways to eat more food if regular hunger is present (which is unsustainable and leads to poor food choices).

drate meal blunted ghrelin rise compared with a high-fat meal.³⁴ In a 12-week study, a low-fat dietary pattern resulted in no increase in ghrelin or appetite despite an average 5% body weight loss.³⁵ And in a 1-year cohort study, maintenance of weight loss and avoidance of weight regain was found to be greater in subjects with lower rises in ghrelin, and subjects with lower rises in ghrelin were eating more low-energy-density foods.³⁶ In a study of successful dieters in the National Weight Control Registry, those who started consuming more energy from fat, the most energy-dense food available, were the individuals who had weight regain.³⁷ And in one randomized controlled study of a low-fat vegan dietary program, which focused on choosing foods that are lower in

energy density, weight loss peaked at month 6, but, remarkably, participants maintained 100% of their weight loss at 1 year.¹³ In short, these studies demonstrate that lowering the energy density of dietary intake allows for individuals to consume a higher volume of food while still consuming reduced calories. The subjective experience of hunger is blunted, and it becomes easier to maintain satiation with lower calorie intake.

Not all studies find improved success with a lower-fat approach, but a focus on fat alone may not reflect dietary patterns that are lower in calorie density overall if processed, low-fat food is emphasized. Additionally, findings may be more related to the effectiveness of intervention implemen-

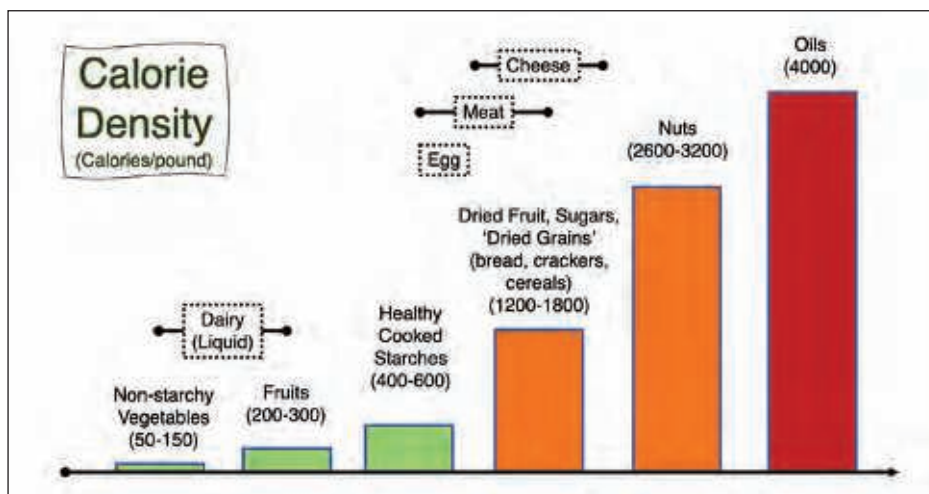
tation and compliance, rather than the efficacy of the nutritional plan applied strictly.³⁸ Another challenge of the calorie-density model is the success of the very low-carbohydrate approach, which emphasizes consuming foods that are high to very high in energy density (fats and meats).³⁹ However, although the success of programs at the extreme of carbohydrate restriction is at odds with the calorie density approach, general population observations are supportive of the benefit and value of the calorie-density framework.

Populations consuming high-energy-density diets tend to have more nutrition-related problems, including overweight and obesity.⁴⁰⁻⁴³ And even at the extreme, a strictly applied ketogenic diet has been found to lead to higher calorie intake than a low-fat, plant-based diet that is lower in calorie density.¹⁹ It is also inadvisable to overlook evidence from high-quality, prospective epidemiologic observations of negative effects on morbidity and mortality associated with higher intake of animal protein.⁴⁴⁻⁴⁶

Changing food choice is difficult, as it often involves challenging lifelong taste preferences. The change usually means consuming food that one does not find to be as enjoyable as the richer food that may have helped to create poor health in the first place. And one cannot continue to routinely rationalize consumption of certain rich foods in times of excitement, celebration, anxiety, boredom, stress, depression, or any other emotional state. “Comfort” food consumed during these times is high in caloric density and rich in added sugar, salt, and/or fat. People do not suffer a stressful day and feel the urge to relax in the evening with a bowl of steamed broccoli. In this way, the effort to change food choice could be described as challenging not only taste preferences, but one’s “relationship” with food.

Although these challenges can be overcome in a process not unlike the way a smoker stops smoking or a high-caffeine consumer cuts back on caffeine, they present uncommon difficulties for patients. This is likely to be why changing food choice is only obliquely recommended in most popular diet programs. It’s not an approach that seems as easy or appealing as eating whatever you want in a “moderate” way, even for people motivated to lose weight. Family physicians need to be prepared to enter a conversation with patients about these challenges head-on. It can be of use to share the follow-

FIGURE 2. Calorie density of various food groups³⁰



Calorie amounts based on sampling of various foods in the US Department of Agriculture FoodData Central.

ing with patients:

- Taste preferences are strongly affected by previous consumption patterns and change over time. With continued effort, healthy food can start to “taste good.”^{47,48}
- Focusing on changing the food environment (food in the home or at work) is crucial. Make the healthy choice the much more obvious, convenient choice, and less willpower is required to stick to behavioral goals.⁴⁹
- Avoiding excessive hunger can help stave off cravings and feelings of loss of control.⁵⁰

EATING STRUCTURE

Eating structure encompasses characteristics of intake, such as when and where people eat, how often they eat, and how they structure their meals and snacks throughout the day. Eating structure has been studied extensively. For example, about 20% of Americans regularly skip breakfast,⁵¹ and skipping breakfast has been associated with increased risk of cardiovascular disease and death from any cause.⁵² Similarly, late-night eating has been associated with increased risk of poor metabolic health.⁵³ It is possible that both behaviors co-occur in the same people, because if one underconsumes calories early in the day, one may be predisposed to overcompensate with excess calorie consumption late in the day or evening.

Eating structure appears to be important in childhood and adolescence as well. Having more frequent structured family mealtimes is associated with improved health in children and adolescents.⁵⁴ Snacking has become more common among both adults and kids, with snacks contributing 27% of calories in children’s diets.^{55,56} The effect of snacking on

weight is mixed and may be determined by the types of foods chosen as snacks.⁵⁶ Unfortunately, most snack calories that children consume come from obviously unhealthy food such as desserts, sweets, and salty snacks.⁵⁷

Because day-to-day eating structure may affect health, intentional interventions targeting eating structure have become increasingly popular. Intermittent fasting can refer to a wide variety of protocols and has been increasingly studied in relation to weight loss and metabolic health. Results suggest that episodic restriction of calorie intake can lead to weight loss and other metabolic improvements,^{22,58} but it may not be more effective than programs that continuously restrict calorie intake.⁵⁹⁻⁶¹ Subject dropout from these studies of intermittent fasting can be as high as 38%, suggesting that this approach may not be as easy to adhere to as is commonly touted.⁶¹

In summary, unhealthy eating structures (eg, skipping breakfast, late-night eating, less frequent family mealtimes, snacking on energy-dense foods) have been associated with poorer health outcomes. But protocols focused on eating structure alone, as in various intermittent fasting studies, are not the easy-to-comply-with panacea they are sometimes portrayed to be.

For individuals who have an eating structure characterized by eating at unplanned, irregular intervals, not eating regular meals, or snacking mindlessly, it is likely to be critical that they address this aspect of their eating habits, regardless of food choice or food amount. But focusing on this alone is unlikely to be sufficient to achieve optimal results.

FOOD VOLUME

Restricting food volume, embodied by portion control or calorie counting, has been the most employed weight loss strategy over time. One marketing approach of focusing on a principal strategy of calorie restriction may make it more appealing—namely that people can continue to eat anything they want, including their favorite, rich foods, but that by employing the appealing concept of “moderation” they can still achieve their health goals. An article on the website of one popular weight loss program states, “What’s your favorite ‘forbidden food’? Chocolate? Cheese? Chicken parm? Whatever you love, love, LOVE ... the flexibility of [our program] means that you don’t have to banish them from your life.”⁶²

The appeal of this approach is further reinforced by the fact that some people can be successful, at least in the short run. Many individuals in intensive, structured weight loss programs, some of which use meal replacement products, can lose a large amount of weight with calorie restriction approaches. Unfortunately, they often regain most of their lost weight within a few years.^{33,63,64}

Regardless of the appealing marketing message, however, it is difficult to restrict calories by continuing to eat the same energy-dense foods but just “eating less” of them. Small portions of energy-dense food are less satiating than larger portions of less energy-dense food. In a single-day study,⁶⁵ a breakfast high in fat and low in weight and volume resulted in less satiation than a bulkier, high-fiber, high-carbohydrate breakfast even though both breakfasts contained the same number of calories. Subjects enjoyed the taste of the smaller, high-fat breakfast, but because it was less satiating, they went on to consume more calories during the rest of the day than subjects consuming the larger, high-fiber, high-carbohydrate breakfast.

Not only are calories from foods high in energy density likely to be less satiating, given that these foods come in smaller weights and volumes, but evidence suggests that they may have addictive characteristics that, in turn, may encourage overconsumption.⁶⁶⁻⁶⁹ The combined qualities of these foods being less filling and more addictive are likely to make it extraordinarily difficult over a long time frame to reduce food volume without a serious effort to significantly reduce, or even avoid, certain energy-dense foods.

Although a singular focus on food volume may be sub-optimal, food volume clearly is important to consider in nutritional counseling. For many, merely changing their food choice or eating structure may not be sufficient to achieve the most dramatic outcomes. Even if a patient is choosing foods that are lower in energy density, it is still possible to regularly overeat, thus limiting the benefit of an effort at dietary change. Binge eating disorder is the most common eating disorder, with a lifetime prevalence estimated to be 2.8% of Americans.⁷⁰ There are likely many more people who may not meet the full criteria for the eating disorder but tend to struggle with similar behaviors. It is possible that those who are habituated to the feeling of consuming excess calories at most meals, on most days, for most decades of their life may need to explore what it feels like to be “comfortably” full rather than overfull.

It may be useful to use calorie monitoring for patients with a history of high-volume eating for a period as they work to understand what they need to be comfortably full. The revised Harris-Benedict equation and the Mifflin-St. Jeor formula are examples of standard formulas to estimate resting metabolic rate,⁷¹ and are embedded in many common metabolic rate calculators found on the Internet. These equations may provide a rough estimation of calorie requirements. Of course, there are a variety of individual variables that might lead any one patient to have a significantly different metabolic rate than what an equation might predict.

By monitoring calorie intake for short periods of time

along with sensations of hunger and fullness and subsequent weight changes, individuals may come to understand where they may struggle with eating larger-than-necessary volumes, or mindless eating independent of any hunger. This may be particularly useful for individuals who have benefited from changing their food choices but have reached a plateau and are looking to further maximize their benefits. Physicians can suggest apps or other resources to help patients evaluate their potential overconsumption. Popular smartphone apps to track calorie intake are widely available and include MyFitnessPal, LoseIt, FatSecret, and Chronometer, among others.

IMPLICATIONS FOR RESEARCH AND FAMILY MEDICINE PRACTICE

Ultimately, changing one's dietary choices and behaviors is difficult. And although many people believe they know how to define a healthy diet, many people don't use evidence-based strategies to target specific changes in their diet. The ideas presented in this commentary might be described as common sense that is intuitively easy to understand, but one does not need to look very far in the marketplace to see a variety of contrasting ideas at odds with the strategies outlined here. The wide variety of approaches, ranging from vegan to ketogenic, to low-calorie meal replacement, to intermittent fasting, perpetuates confusion. When assessing a patient's current behaviors and then offering advice, the framework of food choice, food volume, and eating structure can provide a systematic, comprehensive approach to identifying areas that might benefit from adjustments. Food choice is the most important area to optimize based on evidence related to satiation and calorie consumption as it relates to energy density.

The approach described here, of course, is limited to changing dietary intake. Any individual patient will have interrelated non-nutrition factors that also heavily influence their dietary behaviors. Exercise, sleep, stress management and mental health, relationships, medical conditions and medications, food insecurity, socioeconomic factors, as well as other substance use are obvious examples of non-food health behaviors that may influence eating behaviors. Incorporating an understanding of these influences is critical to offering a holistic approach to dietary counseling.

Ultimately, the American food environment strongly promotes unhealthy choices and behaviors. Americans have been consuming larger portions and significantly more calories during the past several decades.^{64,72} Because of health complications resulting from these trends, it remains an important and worthwhile effort for any individual to improve their diet and lifestyle. For those struggling with excess weight, losing as little as 5% of total body weight is associated with improvements in blood sugar, cholesterol,

blood pressure, healthcare costs, mobility, knee pain, menstrual irregularities, and fertility, among other outcomes.⁷³

For the family physician, it is encouraging that individual patients *are* interested in improving their diet and lifestyle. On any given day, more than 17% of Americans are on a special diet, with the majority of these diets related to weight loss.⁷⁴ To effectively treat our patients suffering from any one of a variety of common lifestyle-related conditions, and to effectively address their interests and concerns, it is critical that all healthcare providers, not just dietitians, have some familiarity with diet and lifestyle coaching. And although dieting may be derided due to the common occurrence of weight regain, it's also clear that a substantial proportion of dieters maintain clinically significant diet and lifestyle changes over a long-term time frame. In the National Weight Control Registry analysis of almost 3000 successful dieters, 87% of them were still maintaining a 10% weight loss at years 5 and 10.³⁷ Family physicians are on the front line of nutrition education for an audience that may or may not have previously demonstrated interest. Sustainable, long-term lifestyle change with strategic improvements in food choice, food volume, and eating structure offers a more comprehensive toolkit than most fad diets or dieting programs today and can be incorporated as part of routine medical care. ●

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