

ORIGINAL ARTICLE

What MFTs should know about nutrition, psychosocial health, and collaborative care with nutrition professionals

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Abstract

Despite sufficient evidence on the role of nutrition in psychosocial health, Marriage and Family Therapists lack the knowledge for sufficient assessment and referrals in treatment. The purpose of this article is to orient MFTs to human metabolism and the effects of various nutrients, or lack thereof, on the psychosocial health in their clients. The roles of several micronutrients and macronutrients will be described as well as the effects of eating patterns and overall metabolic health on mental health. Finally, implications for MFTs as sole practitioners, domains for assessment and psychoeducation, and recommendations for collaborating with nutrition professionals will be discussed.

KEYWORDS

assessment, collaborative care, diet, mental health, nutrition, treatment

INTRODUCTION

The foods that our clients are eating (or not) provide the basic ingredients needed to build all of the important neurochemicals that help brains run effectively and efficiently (Arden, 2015). And yet, there is a known paradox in which excess calories can be consumed, and the individual has micronutrient deficiencies (Astrup & Bügel, 2019). The over-consumption of highly processed foods as well as general poor or inadequate nutrition also affect the brain and can exacerbate mental issues, influencing energy and mood levels, and impairing cognitive and emotional functioning (Black, 2003), all of which in turn impact the engagement in the social world and relationships (Edwards,

2002). Not only does this affect our clients outside the therapy room but research suggests that poor and inadequate nutrition can impede progress in therapy due to the role that nutrients play in regulating mood, cognition, and emotion (Kris-Etherton et al., 2021; Pałkowska-Goździk et al., 2018). As such, nutrition competency is an area that Marriage and Family Therapists (MFTs) would do well to improve in order to better client functioning, including those with mental health symptoms, relationship troubles, but also for those with outward or inward nutrition-related concerns (overweight or obese clients [Pratt et al., 2014] or those with metabolic conditions and eating disorders [DeJesse & Zelman, 2013; Frazier, 2012]).

Edwards (2002) called for the integration of diet and nutrition into MFT practice two decades ago and outlined basic competencies for MFTs but did not review the specific scientific mechanisms, the scope of practice for MFTs, or how to collaborate with other nutrition professionals. Since then, there has been an explosion of nutrition research, but the MFT field as a whole has not evolved, and most MFTs do not receive adequate training on the important role of nutrition in client psychosocial functioning. Certainly, MFTs might employ the Biopsychosocial-Spiritual (BPSS) (Engel, 1977, 1981) framework for assessment and treatment (Robinson & Taylor, 2016)—a component of which is dietary assessment—but many clinicians do not go beyond a very basic understanding of nutrition and diet. MFTs would benefit from a working knowledge and competency not only to integrate in their work with clients but also to more effectively collaborate with nutrition professionals. As such, the purpose of the present paper is to (a) discuss the importance of nutrition related to psychosocial health, (b) review examples of important macro-, chrono-, and micronutrients, (c) discuss the ethical considerations for nutrition information in treatment and domains for MFTs, and (d) review best practices in collaborating with nutrition professionals. We also provide a clinical vignette and the implications for practice and research in the MFT field.

NUTRITION, RELATIONSHIPS, AND MENTAL HEALTH

Overview and orientation to nutrition and psychosocial health

Despite the significant advances in recent decades, the scientific rigor is perhaps the slowest for the field of nutrition because of its complexities. The effect of food/diet on cognitive and emotional functioning is complex and involves many systems, structures, and axes influencing each other. These include, among others, the Hypothalamus–Pituitary–Adrenal axis (HPA), the hippocampus, cerebral cortex, the amygdala, and the brainstem (Gómez-Pinilla, 2008), all of which are affected through the Brain–Gut–Microbiota axis (BGM). The BGM is the bidirectional communication network between the gastrointestinal tract and the primary mechanism through which diet and nutrition affects brain function and mood (Martin et al., 2018; Taylor & Holscher, 2020). Research has substantiated the reciprocal relationship between diet and mental health symptoms, such that a poorer diet is associated with poorer mental health (Jacka et al., 2014) and poor mental health is associated with poorer diet (Kontinen et al., 2010; Paans et al., 2018). There is also a bidirectional relationship between digestion and mental health (i.e., poorer mental health can exacerbate digestion issues and digestive issues can cause more mental health problems [Korn, 2016]). The above findings are important for MFTs and have important implications for psychosocial functioning, which we will further outline below.

Stress, mental health, and nutrition

Dietary intake and the nutritional components within are inseparably linked with internal bodily states, including mood and the stress response. It is not unusual for an individual to overeat, eat to deal with stress or manage negative emotions, eat unhealthy food, or skip meals (Edwards, 2002). When an individual experiences stress, carbohydrates and fat are mobilized to create a surge of cortisol and adrenaline in the body to manage the stress. Following the stress response, the body seeks to return to homeostasis by replenishing the depleted energy levels and manage the absence of neurochemicals (Shilstone, 2001). This leaves the individual searching for high calorie foods. Similarly, individuals may lean toward food as a coping mechanism, such that eating provides temporary comfort and relief from a prior negative experience (D'Arrigo, 2007; Stapelton & McKay, 2014). Known as emotional eating, or the tendency to consume food in response to negative or diffuse emotional states (Van Strien et al., 2005), individuals may choose foods with higher fat and carbohydrate composition (and can happen within individuals regardless of body size; Spoor et al., 2007). This becomes a vicious cycle whereby eating more unhealthy foods with lower nutritional composition can undermine cognitive, emotional, and social functioning.

Some randomized controlled trials (RCTs) and empirical work have investigated solely adjusting nutrition intake for the prevention of unilateral depression (Opie et al., 2017; Roca et al., 2016), by (1) increasing the consumption of fruits, vegetables, legumes, and nuts/seeds, (2) decreasing processed, “fast” foods, and sweets, and (3) following “traditional” dietary patterns such as the Japanese, Norwegian, and Mediterranean diets. Some research has found that anxiety is associated with less dietary diversity (Poozraeian et al., 2015), while other research has shown that eating habits influenced several biochemical markers associated with anxiety, suggesting an indirect effect (Lambrinakou et al., 2017). One systematic review found that two studies reported improvements from dietary changes on anxiety symptoms (Opie et al., 2015), and another more recent study found that following a Mediterranean diet reduced anxiety (Jacka et al., 2017). The above emerging evidence suggests that nutrition intervention alone can help to “decrease mental health symptoms, underscoring the need for MFTs to increase their competency of nutrition and psychosocial health.”

Relational health and nutrition

The associations between relationship distress and nutrition are also bidirectional. Difficulties in interpersonal functioning can lead to social stress, consequently increasing one's vulnerability to emotional overeating (Scott et al., 2012). Indeed, emotional eating has been tied to relationships (Stapelton & McKay, 2014), indirectly through emotional and psychological distress in those with anxious (Scott et al., 2012) and pre-occupied attachment styles (Suldo & Sandberg, 2000). This suggests that a form of emotional coping from relationship distress manifests in emotional eating. These findings have been shown for both parent–child relationships (Ferrer et al., 2017; Snoek et al., 2007) as well as adult romantic relationships (Butler et al., 2010). Butler et al., (2010) found that women who suppress emotions to please their male partners (i.e., not bringing up emotional conversations) have higher rates of emotional eating. In addition, one partner being an emotional eater increases the likelihood the other will be as well (Homish & Leonard, 2008), and research suggests that this occurs through emotional transmission of mood states (Goodman & Shippy, 2002) and behavioral contagion (reciprocal dietary undermining; Novak et al., 2020).

Aside from emotional eating that may follow conflict, poor or inadequate nutrition, especially poor meal timing, can precipitate conflict. Both couple and parent–child dyads may experience conflict

because of low blood sugar and hunger (Edwards, 2002). Low blood sugar (hypoglycemia) can occur when a person goes longer without food, exercises more than usual, or has a physical or health complication that impairs metabolism and insulin processing (such as diabetes; Anderson & Kornblum, 1984). The resulting low blood sugar can increase physical sensations of nausea and tension, can impair cognitive and emotional functioning, including increased irritability and anger (i.e., “hangry”), and result in more negative interpersonal interactions including higher rates of arguing (Edwards, 2002; Gonder-Frederick et al., 1997). While even one partner with low blood sugar is cause for concern and heightened interpersonal distress, there is evidence that spouses are highly concordant in their eating behavior in both nutrient intake as well as timing of meals (Davillas & Pudney, 2017; Meyler, Stimpson, & Peek, 2007). As such, the likelihood of conflict increases around times when one or both members in a family has lower blood sugar.

SPECIFIC RECOMMENDATIONS AND IMPLICATIONS FOR MFTs

The scope of nutritional assessment & intervention for MFTs

Considering the important links discussed above, how can MFTs ethically integrate nutrition in practice, and what do they need to know both when working with clients and with other nutrition professionals? There are three helpful areas to consider in identifying the ethical concerns related to incorporating nutrition and nutrition assessment in therapy: (1) professional certification and licensure, (2) state-level laws, and (3) therapist competency. Consistent with AAMFT's 2015 Code of Ethics, Standard III on Professional Competence and Integrity, 3.10 Scope of Competence states that MFTs cannot diagnose, treat, or advise on problems outside the recognized boundaries of their competencies. Within the United States, each state has different laws that govern who can give nutrition-related care. Although many states are opening up who can practice, administer, and advertise nutrition in their practice (for both good and ill), there are many that do not and only allow registered dietitians (RDs) to practice, even if they have a nutrition degree or advertise as a certified nutritionist; see nutritionadvocacy.org and <https://www.eatrightpro.org/advocacy/licensure/professional-regulation-of-dietitians#resources> for each states' corresponding laws. Finally, MFTs need a working competency and need further education and training on nutrition assessment and intervention. To that end, we will review the basics of nutrition, including the role of macronutrients, several important micronutrients, and the timing of meals (known as chrononutrition), on client psychosocial health. While not exhaustive, it can be a good starting point for MFTs.

The basics of nutrition

Macronutrients

Macronutrients—protein, carbohydrates, and fats—are not only the basic building blocks for energy but also provide important nutrition to the brain for emotional, cognitive, and relational functioning. Protein provides the brain with amino acids that are crucial for cellular integrity and form the basis of neurotransmitters (e.g., tryptophan and serotonin) that regulate mood (Glenn et al., 2019). Clients that consume too little protein (oftentimes but not always those who are vegan or vegetarian) can have brain fog and a depressed mood (Mariotti & Gardner, 2019), potentially affecting relationships. Carbohydrates, which include both simple (fruits, vegetables, and sugars) and complex (whole

grains, starchy vegetables, and beans), provide the brain and body with fuel (Korn, 2016). Simple carbohydrates may temporarily lift mood but can cause blood sugar levels crashing while complex carbohydrates slowly release glucose into the bloodstream (Weil, 2000). As such, clients who consume too many simple carbohydrates or too few complex carbohydrates may experience fluctuating moods, which similarly affect relational functioning. Finally, fats come in many forms, both naturally occurring (saturated, monounsaturated, and polyunsaturated) and engineered (hydrogenated/trans-fats). Generally, those natural healthy fats lubricate the brain and body organs, help with memory, and transport vital minerals and vitamins to the brain, while engineered fats can impair learning and memory, lead to weight gain, and damage the body's essential processes (Korn, 2016). Specific types of fats and fatty acids, and their importance for mental and emotional health, will be described later.

Finally, although not a specific macronutrient, the importance of hydration should be mentioned. Recent research has found that dehydration alters the function and structure of the brain so that dehydrated brains must work harder, resulting in problems in cognition, attention and focus, and even emotional control, such as irritability (Wittbrodt et al., 2018). On average and depending on activity levels, individuals need to drink 64–104 ounces of water spaced throughout a day, avoiding hyponatremia (low blood sodium levels) or hyperhydration (overhydrating) by paying attention to sodium loss and overconsumption of water (Riebl & Davy, 2013). Other calculations are based on body weight and suggest that one should drink approximately 50% of their body weight in ounces (150-pound person should imbibe 75 ounces of fluids a day).

When it comes to calories, there is no optimum ratio of carbohydrates, fats, and protein, just minimum of each to promote and sustain health (National Academies, 2005). Genetic heritage determines the diverse nutrient needs that evolved in different environments and that persist over time (Gonzalez, 2017). The ideal diet for each individual will reflect the complex interaction between their genetics, current locales, and evolving physical and emotional status (known as bioindividuality). The Institutes of Medicine within the National Academies of Science have published reference tables, sorted by sex and age groups, that delineate adequate and/or optimal intakes of both macronutrients, which provide energy, and micronutrients, which facilitate metabolism, serve as antioxidants, and are converted to numerous signaling molecules (National Academies, 2005). With the exception of genetic polymorphisms affecting specific nutrient metabolism, these values are representative of the needs of 99% of humans (Rosenberg et al., 2004).

Micronutrients

Micronutrients, the elements required in small quantities to sustain life, have also been linked to mental health (Kar & Ahmad, 2017; Lakhan & Vieira, 2008). For example, magnesium and vitamin B (e.g., folate and folic acid) have been shown to reduce depressive and anxiety symptoms (Eby & Eby, 2006), and dietary fiber, probiotics, and prebiotics are involved in healthy gut bacteria regulation (Makki et al., 2018), where 90% of serotonin is produced (Gershon & Tack, 2007). Efforts of scientists from the past 50 years to isolate micronutrients (vitamins and similar compounds) and use them in highly concentrated amounts to prevent and reverse disease have been mostly fruitless and sometimes harmful (Bouayed & Bohn, 2010). Thus, advice to eat foods, once nutrient deficiencies have been corrected (and in the absence of genetic polymorphisms preventing appropriate metabolism of said nutrients), is still best practice. The age-old adage of eating foods that are a variety of colors stems from the knowledge that there are biologically relevant molecules that determine the pigment of the plants but also provide value for humans, most often in the form of antioxidants (Klein, 1937). Another approach, however, may be supplementation with herbs and isolated supplements which some clients may choose (a full listing of dietary supplements can be found here: <https://ods.od.nih.gov/factsheets/list-all/#>). However, it is important to know that there are numerous biochemical

interactions that can occur between food, pharmaceutical, and other consumed substances which enhance, inhibit, or, otherwise, alter the absorption and distribution of nutrients (Ryu et al., 2018). Our review below focuses on the most important micronutrients and the effects on mental health that have been studied with much support: vitamin D and omega three fatty acids.

Vitamin D

Vitamin D is a neurohormone that is implicated in over 1000 different biological processes in the body, making it one of the most important vitamins with a large potential for problems in the case of deficiency. Recent research has indicated that those in the Northern Hemisphere are deficient in vitamin D, especially those above the 37th parallel—essentially a line from San Francisco, California to Richmond, Virginia (Johnson, 2010)—and this deficiency is associated with many mental health conditions and externalizing behaviors in both children and adults (Robinson et al., 2020). The fact that it is involved in so many processes does make the mechanisms complex, but there are a variety of locations of vitamin D receptors in the cortex, hippocampus, and cerebellum, underlying crucial processes that regulate movement, memory, and cognition. In addition, vitamin D helps transport serotonin to the brain, improves calcium absorption (when paired with vitamin K helps calcium get to the right places), and is associated with increased brain-derived neurotrophic factor (BDNF, which plays an important role in neuronal survival and growth), glial cell line-derived neurotrophic factor (GDNF), and nerve growth factor—which help maintain and improve the structures of the brain circuitry (Arden, 2015). Although optimal vitamin D levels may vary for different ethnic and racial groups (Christakos et al., 2019) as well as age, adipose tissue, and several other factors, average recommended supplementation is between 400 and 1000 IU or about 10–25 mcg per day (Penckofer et al., 2010). To determine the optimal response to supplementation, an annual 25-hydroxy vitamin D blood test provides serum levels and assesses the unique individual requirements to maintain optimal levels.

Omega fatty acids: DHA and EPA

Omega-3 fatty acids are foundational to good brain health, while trans fatty acids can alter cognitive and emotional control (Arden, 2015). The two main omega-3 fatty acids—eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)—have been implicated in many psychiatric conditions, including schizophrenia, Attention Deficit Hyperactive Disorder (ADHD), depression, and bipolar disorder, suggesting that those individuals who have lower levels of EPA and DHA are at higher risk for the development and maintenance of these conditions (Harbottle & Schonfelder, 2008). The primary benefits of EPA and DHA in the brain include the inhibition of cytokine synthesis (which, if left unchecked, can cause inflammation in the brain), play an important role in the dopaminergic and serotonergic systems (especially important in mental health and the source of targeting for many psychopharmacological drugs), help receptor functioning and the manufacturing of more synapses, and maintain cell and neuron structure integrity, all of which are crucial for neuroplasticity (Arden, 2015; Ross et al., 2007). As such, it is not surprising that it is recommended in combination with other drugs and therapeutic treatments (Peet & Stokes, 2005). The best sources of omega-3 fatty acids are found in most fish, fish oils, and many nuts and seeds (Korn, 2016). Most recommend dosages range between 1 and 10 g a day, with an average of 2000 mg (2 g) for many conditions, but careful prescription and caution should be coordinated with the primary physician. For an excellent review on proper supplementation of Omega fatty acids, see Bozzatello et al., 2016.

Chrononutrition (meal timing)

Some clients might skip breakfast—which is associated with lower energy, poorer problem-solving, and concentration as well as mood swings (Arden, 2015)—or just ingest caffeine without eating, which can leave them feeling jittery and anxious (also the metabolism of caffeine can interfere with sleep). Other clients might get most of their daily food intake from one large meal and skip other meals. The time of day and frequency of eating is known as chrononutrition and refers to how nutrition and foods are used to regulate circadian and metabolic rhythm (Korn, 2016; Mattson et al., 2014).

Research has established a strong relationship between metabolic and mental health that shares inflammatory pathways and disruption of circadian signaling (Nousen et al., 2013). It is well-known that this disruption of circadian rhythm underlies many health problems, including insomnias, mood disorders, PTSD, and complex trauma (Walker et al., 2020). Conversely, metabolic health/flexibility can be defined as the physiological ability to switch seamlessly between macronutrient sources for energy needs, or more generally, to not substantially lose physical and cognitive performance in the short-term (24 h or less) absence of food (Goodpaster & Sparks, 2017). The lapses in performance are most simply caused by lower circulating blood sugar and thus less glucose fueling the brain, but the relationship between physiology and psychology may be more complex in many individuals (Benton, 2002). In medicine, this metabolic dysfunction (insulin resistance) is described as the metabolic syndrome, which is a constellation of measures including increased waist circumference, blood pressure, fasting glucose, triglycerides, and decreased high density lipoproteins and is comorbid with clinical depression (Pan et al., 2012). With this in mind, some clients may be able to improve behavioral outcomes by improving insulin resistance and its associated radical blood sugar fluctuations.

Additionally, the circadian and metabolic rhythm are affected by many factors, such as sleep and physical activity, but also by nutrients, including blood sugar and fatty acids in the blood stream (Korn, 2016; Mattson et al., 2014). For optimal brain health in clients with insulin resistance, eating smaller, evenly spaced meals at the same or closely similar times each day may help regulate metabolism and stave off low blood sugar, which can increase feelings of anxiety and panic (Aucoin & Bhardwaj, 2016). Finally, there is a vast amount of evidence about timing of macronutrients, with consumption of protein rich foods earlier in the day being better for energy and alertness and complex carbohydrates later in the day being better for relaxation and sleep (Korn, 2016). Particular micronutrients and hormones associated with regulating circadian rhythm include vitamin B12, for its role in sensitizing the circadian rhythm via the hypothalamus, the mineral lithium, and the hormone melatonin, which, unlike popular belief, does not act as a sedative but instead helps regulate the rhythm (Geoffroy & Etain, 2017).

Assessment and psychoeducation on the link between food and mood

Now that we have reviewed a basic understanding of nutrition, we will discuss how MFTs can ethically assess, deliver psychoeducation, and effectively work with nutrition professionals. First, however, it is important to review a few of the most common reasons why a diet assessment and inquiry may be necessary. According to Edwards (2002), these include (1) depression and anxiety (as well as trauma and chronic stress); (2) metabolic and cardiovascular disorders (including type 1 and type 2 diabetes, obesity, history of stroke, and heart disease); (3) eating disorders, including anorexia nervosa, bulimia nervosa, binge-eating disorder, Avoidant/Restrictive Food Intake Disorder (ARFID), and the “umbrella” diagnoses of “other” and “unspecified” eating disorders; and finally, (4) relational conflict and interpersonal stress. In these situations, MFTs may consider exploring their client's dietary and

nutrition habits as part of a well-rounded assessment (Edwards, 2002), also including sleep, exercise, substance use, and medication (see Robinson & Taylor, 2016 for BPSS assessment domains).

Because the nature of a diet inquiry may be sensitive in nature, the MFT may need to set the stage for these conversations by first asking more general and less invasive questions before going deeper. This may look like the following:

- We have been discussing your self-care routines and its role in your well-being. Research and clinical evidence suggests that our diet can play a pivotal role in how we feel. Is this something you would be interested in exploring deeper with me?
- You have shared how you have been feeling anxious and fatigued lately. There may be some areas in your self-care routine, in particular what kinds of foods and beverages you eat and at what times of the day, that can illuminate some opportunities for feeling better. Is this of interest to you?
- You mentioned that you and your partner have more frequent disagreements and fights right before dinnertime. It may be worthwhile to discuss your nutrition habits and at what times you eat, which may be linked with the fights you are having. Is this something you'd be interested in discussing further?

Once these initial conversations have taken place, a deeper discussion and assessment of nutrition habits may be warranted.

In addition, and importantly, MFTs should consider the client's sociocultural context when it comes to food and nutrition assessment. Becoming familiar with and engaging in a discussion about a client's traditional, cultural dietary habits, favorite recipes, and how they prepare food builds rapport, demonstrates cultural respect, and provides insights into values and the direction therapy might take. A useful interview tool is the Cultural Formulation Interview, published in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; American Psychiatric Association, 2013) and available to download and use at no charge. A client-centered, adaptable, and non-stereotyping assessment enables the clinician to gently gather from client or caregiver/informant information about traditional foods, medicines, and rituals that better inform the clinician and enhance cultural humility and competency. In addition, one area that is often of concern to clients, especially families with limited financial resources or who may live in "food deserts," is affordability. While it is not the MFT's role to prescribe food changes or discuss costs and affordability, understanding a client's socioeconomic status can help the MFT understand what the client's nutritional habits are and why nutrition-related changes may be more difficult; these issues may be discussed and coordinated with nutrition professionals as described below.

General nutrition assessment

Family Systems Theory (Hanson, 1995; Von Bertalanffy, 1952) outlines both first-order and second-order level change, which can relatedly be conceptualized as assessment and can be helpful to the MFT in assessing nutrition-related domains. First-order assessment includes those directly relevant to nutrition, such as actual dietary-behaviors (chrono-, macro-, and micronutrients). Second-order assessment includes familial and contextual factors that facilitate or impede first-order dietary behaviors and can include children's school schedules, financial concerns or economic pressure, and work-related schedules. Although not exhaustive, Table 1 presents the assessment questions that can guide the MFT's assessment.

TABLE 1 First and second-order nutrition assessment

First-order nutrition assessment
Domain
Macronutrients
Are you following any specialized diets (keto, paleo, vegetarian, vegan, DASH, etc.)?
How much protein do you get a day? Are you getting enough?
How much of your calories come from fats and carbs?
How much sugar do you consume? What sugary drinks are you drinking?
How much water are you drinking per day?
How much caffeine do you drink and what time of the day?
Chrononutrition (meal timing)
What time of the day do you eat your meals?
How long do you go between meals? Do you eat snacks?
Are there long stretches between meals that you notice your mood fluctuates?
Micronutrients
Do you spend time outside in the sunshine (vitamin D)? Do you wear sunscreen and sunglasses?
Do you take supplements (vitamin B, C, D, multivitamins, fish oil, zinc, magnesium, etc.) for your health?
How much fish and food from the sea do you consume, on average, during the week?
How much red meat do you eat during a typical week?
How much nuts/seeds and legumes do you eat?
How much leafy greens and vegetables do you eat on any given day?
Second-order assessment (Family/Contextual factors)
What extended factors keep you from eating at regular times (children's schedules, food insecurity/availability, finances, etc.)?
What experiences in your environment may be causing more stress recently? Have you noticed any issues with digestion related to anxiety, stress, or depression because of these experiences?
Do you and your partner notice fights occur more frequently when one or both of you are "HANGRY"?
Do you have access to food during work/school?

Food and mood assessment

Relatedly, nutrient intake, types of food eaten, meal size, timing, and frequency can be tracked with a food journal or log that also identifies physical or mental symptoms. Becoming aware is the first stage of mental health, and often clients are not informed about the relationship between what and when they eat and how they feel. Edwards (2002) suggests that the association between meal times/intake can be plotted on a graph, with meal times on a horizontal axis and emotional, stress, or energy levels on a vertical axis. Additionally, the Korn Food Mood Diary (Korn, 2017) is a more formal three-day diary that asks clients to track what they eat and when and to observe their emotional, interpersonal, and physical responses (see Table 2). This diary begins the process and serves as a starting point to explore self-care processes, including hydration, food choices including fats, carbohydrates, refined foods such as sugar and proteins, and preparation strategies and addiction behaviors or disordered eating. A review of this diary may also reveal the use of stimulants like caffeine and sodas and provide a

TABLE 2 The Korn food-mood diary^a

Meal	Beverages	Energy Level (↑, ↓, or =)	Mood (↑, ↓, or =)	Interpersonal Interactions (+ or -)	Digestive Response (gas, bloating, gurgling, elimination, etc.)
Breakfast (Time: _____)					
Snacks (Time: _____)					
Lunch (Time: _____)					
Snacks (Time: _____)					
Dinner (Time: _____)					
Snacks (Time: _____)					

Client Name: _____ Date: _____

Write down everything you eat and drink for three days, including all snacks, beverages, and water. Please include approximate amounts. Describe energy, mood, or digestive responses associated with a meal/snack and record it in the right-hand column. Use an up arrow (↑) for an increase in energy/mood, down arrow (↓) for a decrease in energy/mood, and an equal sign (=) if energy/mood is unchanged. Time of waking: _____ a.m./p.m.

^aAdapted with permission from Dr. Leslie Korn <https://drlesliekorn.com/client-forms/>

first-stage opportunity to conduct psychoeducation about a judicious use of caffeine and its contribution to anxiety and insomnia.

Psychoeducation

After careful assessment, MFTs can deliver psychoeducation on the importance of nutrition and review the specific information on mental health and macro-, chrono-, and micronutrition as discussed above. Doing so is different than prescribing or recommending nutrition changes and fits within the systemic orientation of competency for the MFT. It is important to reiterate that MFTs must not recommend any specific supplements (either knowingly or unknowingly), specialized diets, or nutrition-related changes and are otherwise held liable for adverse events as a licensed healthcare provider. Statements must be tentative in nature (e.g., “Some research suggests that...”) and MFTs may repeatedly state that they are not experts but can help establish collaborative care with a nutrition professional for any desired changes.

Additionally, there are helpful books for clinicians to improve their competency and how they may frame nutrition-related conversations in the therapy room. A few notable books include *Nutrition Essentials for Mental Health* (Korn, 2016) and *Nutritional Treatments to Improve Mental Health Disorders* (Procyk, 2018). For clients, therapists can recommend the *Good Mood Kitchen* (Korn, 2017) which can serve as a helpful guide on the importance of nutrition and culinary medicine to improve psychosocial health. The book provides practical tips and recommendations on how to assess, improve, and change one's own approach to nutrition.

Collaborative care between nutritionists and registered dietitians

MFTs as co-providers

Many individuals—either prompted by a physician or of their own accord—choose to curb their eating habits by refraining from unhealthy foods and increasing consumption of healthier foods. However, consistently maintaining a healthy diet, especially long-term diet change, proves to be difficult for many people (Wing & Phelan, 2005). MFT's knowledge of the above mechanisms and specific dietary habits will better help MFTs collaborate with registered dietitians (RDs) and nutritionists and better “jump start” and integrate collaborative care (Edwards, 2002; McDaniel et al., 1995; Seaburn et al., 1996).

In preparation for collaborative care, MFTs would do well to understand the differences between types of nutrition professionals and their roles/functions, depending on the specific goals of the client. It is important to note that within the United States, there is a divide between eastern medicine (or complementary and alternative medicine) practices and western medicine, and this has spilled over into practice laws and state regulations. Nutritionists most often require less formal training and state certification and licensure regulation than RDs. In other words, depending on the state, anyone can call him or herself a nutritionist and offer nutrition advice, but not everyone can call themselves an RD (The Academy of Nutrition & Dietetics, 2021a)—an important consideration when discerning to which nutrition authority to refer clients. Nutritionists usually focus on teaching general food and health behavior guidelines, whereas RDs are considered food and nutrition experts (The Academy of Nutrition & Dietetics, 2021b) who are more equipped to provide medical nutrition therapy for a wide array of acute and chronic health conditions, such as eating disorders or disordered eating behaviors, or concerns related to obesity and physical health symptoms like substance use disorder, diabetes, and heart disease. Additionally, the Board for Certification of Nutrition Specialists offers

a more rigorous nutrition certification to become a Certified Nutrition Specialist (CNS; American Nutrition Association, 2021), which qualifies one to work within the same scope of practice as RDs in some states (however, a CNS is not recognized in all states). Becoming a CNS or RD require similar qualifications: a bachelor's degree in dietetics (for RD) or a master's degree or higher in a nutrition or related field (for CNS), coursework completed at a regionally accredited institution, 1000 (CNS) or 1200 (RD) hours of documented, supervised practice, and passage of a certification/licensure exam (American Nutrition Association, 2021; The Academy of Nutrition & Dietetics, 2021c).

When a client does have health issues that may require a more tailored approach, the MFT might consider referring clients to RDs who can perform a nutrition-focused physical exam (NFPE), which can identify micronutrient deficiencies, and includes a four-stage framework for evaluating clients (Swan et al., 2017). This includes nutrition assessment, diagnosis, intervention, and monitoring and evaluation. NFPE also incorporates (1) food/nutrition-related histories, (2) anthropometric measurements, (3) biochemical data, test, and procedures, (4) nutrition-related physical findings, and (5) client histories of psychosocial, SES, and behaviors/attitudes that influence nutrition-related health (Esper, 2015). Like functional or integrative clinicians such as medical doctors (MDs) or a nurse practitioner, the CNS or RD can perform, analyze, and interpret many biological tests and examinations. These can include a urinary neurotransmitter test (which can help identify important deficiencies and difficulties in neurotransmitters), stool sample tests to examine gut microbiota, and blood panels to examine insulin resistance, hormones, lipids, and cholesterol, among many other tests. In conjunction with the RD's recommendations, the therapist could help the clients adhere to their new dietary guidelines in addition to their regular therapy goals. In situations where clients may need more aggressive lifestyle intervention or have presenting concerns that may be better met with solely nutritional intervention, it may be advisable for the MFT to refer out entirely to an RD to correct or work on improving nutrition before revisiting regular therapy goals.

MFTs as secondary providers

In addition to helping individuals change and consider the role of food on mental and relational health, MFTs can play a unique role in systemic intervention with nutrition professionals, both with addressing underlying contributors or blocks (adverse childhood experiences or post-traumatic stress disorder) or associated underlying family dynamics (social learning/modeling). Ecological models of eating behavior are multifaceted and contain macrolevel factors (sociocultural) and physical environment factors (neighborhood food and restaurant availability), but the social level is where couples and families influence each other's dietary habits (Story et al., 2008). Although the shared living environment creates the same conditions and structure around food purchase, mealtimes, and portion sizes, romantic partners, families, and other social relationships can be both a powerful resource and potential barrier to sustaining a healthy diet (Rydén & Synder, 2011). For example, when an individual tries to change their dietary behavior, a romantic partner's response can directly impact—for good or ill—their partner's success in maintaining a healthy diet. Partner responses can range from supportive and helpful (Meltzer et al., 2012) to uninvolved or unwilling to adjust their own diet in the face of their partner's changes (Gallant, 2003; Rydén & Synder, 2011), even as far as adversarial and critical, wherein partners act as saboteurs against the person's efforts (Ball & Crawford, 2006; Harp, 2013; Hindle & Carpenter, 2011; Kiernan et al., 2012; Stanforth & Mackert, 2009). These attempts can include offering foods not on the meal plan (Brewer-Lowry et al., 2010; Chesla & Chun, 2005), an insistence on fast food or take-out (Wong et al., 2005), or even buying and stocking unhealthier foods at home despite the partner's efforts to refrain from eating them (Harp, 2013). Finally, other research

suggests that just being around others who are eating and drinking excluded items can undermine change efforts (Wen et al., 2004).

The MFT is uniquely qualified to address these issues, recognizing that any dietary changes with timing/frequency of meals and macro- or micronutrients require a shift and reorganization at the family level—as family members are needed to support, collaborate, and plan the changes of one individual in the family in addition to potentially adjusting their own dietary behaviors (Edwards, 2002). Recognizing the systemic nature of dietary change may have helpful spillover effects into the physical, emotional, and relational domains of other family members who might not be in treatment (Edwards, 2002; Gorin et al., 2018). As such, nutrition professionals may need to be better informed about the unique qualification and skill set of MFTs so that they can better intervene and create lasting change with their patients.

Barriers and recommendations for collaboration

Both MFTs and nutrition professionals may have apprehensions and worries about working together that can impede collaborative efforts. Some of these important factors include unfamiliarity with nutrition and mental health functioning, little time to seek and pursue professional relationships, and a lack of local professional resources or referral sources. Other concerns an MFT may have included are worrying about encroaching on domains beyond their scope of practice, having clashing strategies about the course of care and treatment, a fear of losing their clients, or even worrying about the upkeep of a professional relationship and collaboration throughout the process (DeJesse & Zelman, 2013). Additionally, nutrition professionals may have similar apprehensions and fears. As such, MFTs must intentionally seek collaborative relationships with nutrition professionals and be diligent in addressing these concerns up front in order to effectively establish and coordinate care. Below are a few recommendations to consider when establishing and coordinating care:

1. **Advocate for the Importance and Expertise of the Other.** Good collaboration requires articulating and describing the importance of the other professional. MFTs should know the domains, areas of expertise, and specific interventions that nutrition professionals use on a regular basis as described above.
2. **Joint Sessions.** Joint sessions with a client and a nutrition provider will help establish care and ensure everyone is on the same page. While this can make fee-for-service difficult, providers may consider alternating who is responsible for and collect billing as appropriate (McDaniel, 1995).
3. **Clarify Roles and Boundaries.** The MFT and nutrition professional should be open about where the scope of practice begins and ends. Figure 1 displays the domains of nutrition intervention and levels where MFTs fit with other professionals. The first level represents where MFTs can incorporate psychoeducation about the importance of nutrition to their clients. In part, the MFT here can function as a salesperson and relay the important information provided in this paper to their clients, including a discussion about the role of certain types of foods, macro- and micronutrients, and meal timing can influence their mood and symptoms. Levels 2 and 3 are where other providers' expertise comes in and where MFTs can be helpful as secondary providers or when providing dual care to clients.
4. **Coordinating Goals.** Similar to scope and boundaries, each professional should relay on what each provider's goals are for the client and what realistic change may entail. These goals should operate in tandem or sequentially, consider phases of treatment, and not overlap or overstep the work of the other provider.

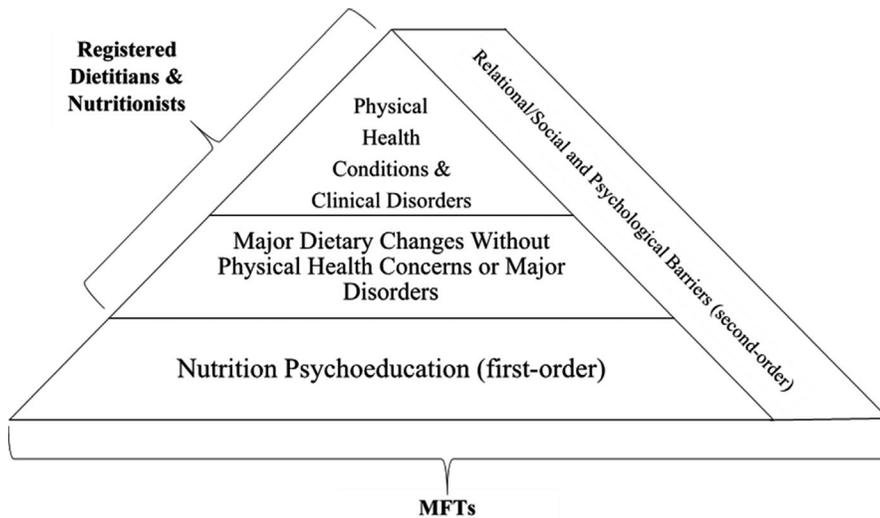


FIGURE 1 Pyramid of nutrition intervention for professionals

5. ***Clear and Consistent Communication.*** Both treatment providers should clearly communicate expectations for treatment throughout the process. Whereas the assessment phase may entail more communication, each should be sure to track and follow-up with the other after an individual session with a client. For example, during a session with an MFT, who may see the client more frequently, the client may bring up any physical or mental discomfort resulting from dietary changes. The MFT may then coordinate with the nutrition professional and relay any information if the client has not done so.

Clinical vignette

We now provide a clinical vignette that brings together the aforementioned information. This vignette is an amalgamation of several cases used to illustrate systemic therapy and collaboration. Names have been anonymized to protect identities.

When John and Amanda presented to therapy, they had been married for 10 years and had 3 young children at home. Their primary issue, they believed, was John's depression, which had hit hard in the last year when his father, whom John had been very close to, passed away suddenly of a heart attack. John had become more withdrawn, angry, tired, and moody since the death, and both partners recognized the toll it was taking on their marriage—emotionally, mentally, sexually, and even physically. Amanda was distressed by John's grief and wanted to know how to better support him, as well as address the ways her father-in-law's passing affected her and John's marriage relationship.

As part of their assessment in the first few sessions, their marriage therapist, Elaine, explored John and Amanda's lifestyle habits, including their sleep, exercise, and diet patterns. It became clear that both partners, but particularly John, struggled with self-care and balancing their physical health needs with the demands of raising small children, working full-time, and carrying the burden of grief. John had put on 20 pounds since his father's passing, and while both partners got decent sleep, neither of them exercised or paid much attention to eating well. Elaine emphasized how lifestyle changes could markedly improve their energy, mood, and mental health and in turn buoy their individual and

relational functioning at work and home. They expressed interest in learning more, and they agreed to let Elaine do further assessment on their diet specifically to see how it worked against them in their efforts to combat grief and take back their marriage. Elaine suggested John and Amanda each keep a three-day food mood diary, then together, they could all assess John and Amanda's diet and nutrition patterns.

When the couple returned the following week, John reported he drank several cokes a day, and often skipped breakfast or just ate a donut with his several morning coffees and creamer. He often grabbed a processed meat sandwich and French fries for lunch, ate fast food with his family for dinner and had snacks with his beers in the evening. Amanda typically had cereal in the morning with the kids, some fruit or energy bars in the afternoon, and fast food with the family for dinner on nights when she did not cook at home (her "home-cooked" meals were often frozen meals or a high-carb casserole).

In their diaries, both partners identified the same times of day when their mood and energy declined; these were also the times John became irritated at work and Amanda became most snappy with the kids. Their drops in energy often followed fasting or going too long without eating or about 60 min following high-sugar or caffeine consumption. Elaine identified reactive hypoglycemia as a contributing factor to their mood lability and guessed that their chronic stress, both at work, with the children, and from John's father's death, and the years leading up to it, had depleted their energy and taxed their adrenal function, which regulates glucose metabolism. Given their eating habits and patterns, it seemed clear they could benefit from re-working their diet and gaining further education from a dietitian.

Elaine assessed John and Amanda's comfort and interest in working with a dietitian, as it seemed like the dietary changes they needed extended beyond what Elaine could offer as their marriage therapist. The couple expressed concern over the cost of seeing a dietitian as well as a therapist. After talking through it with Elaine in session, they decided it was worth it to focus on their physical health in addition to their relational and emotional health and agreed to alternate weeks between seeing a dietitian and seeing Elaine for therapy.

Elaine reached out to a dietitian, Katie, she knew in the area, and they established a time to have a joint session with John and Amanda all together. In the joint session, Elaine, John, and Amanda discussed what they had already learned about John and Amanda's dietary habits in couples' therapy and established what they hoped for in seeking Katie's help. This meeting was very encouraging to John and Amanda—they expressed enthusiasm and confidence in Katie and Elaine collaborating on their joint physical and relational goals.

Over the next few months, Elaine saw John and Amanda every other week, while they met with Katie on the weeks in-between. Elaine checked in with Katie every month to discuss John and Amanda's progress and get feedback on relational dynamics or barriers Katie saw between John and Amanda that prevented their progress in their dietary goals. This illuminated ways Elaine could work with John and Amanda on their relationship in order to better facilitate not only their shared dietary goals but also their other goals and dreams as a couple.

Elaine saw significant progress in both John and Amanda as they worked with Katie to better their health. As the couple made changes to their food and nutrition habits, they noticed a shift in their mood and energy, and both dropped a few pounds—which encouraged them further. Elaine noticed as John and Amanda gained more confidence in themselves and their moods improved, they were more responsive and engaged with one another in therapy, which amplified progress towards their relationship goals. Additionally, as they grew closer and more connected through couples' therapy, they were more supportive of one another in their health goals. Thus, the effects of couples' therapy and meeting with the dietitian were reciprocal.

There were, of course, bumps in the road, and these efforts demanded commitment and diligence on both Amanda and John's, as well as Elaine and Katie's parts, but through their collaborative efforts they saw rewarding payoffs. After about 6 months, John began to feel more like himself, and while his grief remained, he could emotionally invest in his work, wife, and children in ways he had not been able to in over a year and a half. Amanda felt relief over her husband's progress and stronger in their emotional availability and responsiveness to each other. They both felt the quality of their marriage improve and expressed significant gains in their sense of empowerment to take care of themselves and their relationship in the process.

Implications and considerations for research and practice in the MFT field

Although the recommendation and considerations within this paper represent a large body of scientific and intervention research from other fields, there is a lack of training and education as well as empirical research on the practice of nutrition assessment, psychoeducation, and collaboration within the MFT field. While Edwards (2002) called for more integration of diet/nutrition into MFT curriculum and training, it has yet to come to fruition. COAMFTE accredited programs are tightly structured, leaving little room for nutrition education in courses. As such, MFT programs may have to get creative about where nutrition education fits in, ideally integrated within a Medical Family Therapy course on collaborative care, psychopharmacology, and other health behaviors, including sleep and exercise. It might also be feasible to include nutrition education within addiction and eating disorder courses, as there are natural overlaps. There has also been a call within dietetics education programs to increase experiential opportunities with students and professionals from other health professions (Eliot & Kolasa, 2015) and the field of MFT fits nicely. Because dietetic programs are moving dietetic internships within master's level programs, there can be unique opportunities for collaborative care between dietetics and MFT graduate students.

Related to MFT research, the present paper outlines how diet and nutrition may be one of the "extratherapeutic" factors that play an important role in client change and therapy outcomes. Our systemic orientation and training affords us opportunities to help address both individual and family dietary change; yet, future MFT process and outcome research is needed to explore the nutrition habits of clients within and outside of the therapy room. To that end, several important questions remain that may help guide future studies and empirical work:

1. Is dietary intake a moderator in the link between therapy and client outcomes, such that those clients with worse nutrition habits have poorer outcomes?
2. Does incorporating nutrition assessment and psychoeducation create better conditions for improvement in therapy for individuals, couples, and families? At what stage and how often should clinicians address the role of nutrition and nutrition change? What order and combination of nutrition intervention and treatment as usual works best for clients and outcomes?
3. When collaborating with a nutrition professional, are outcomes accelerated? And at what levels of improvement in diet are psychosocial outcomes better?

CONCLUSION

In sum, MFTs need more education and training on the foundations of nutrition and its role in the etiology, maintenance, and treatment of mental health disorders. This paper serves as a launching point

for MFTs to identify key micro-, macro-, and chrononutrition issues related to clients' presenting concerns. To an extent, MFTs can effectively work within this realm but also need to identify when and how to effectively coordinate care with RDs and nutritionists. MFT training programs would do well to incorporate nutrition within their curricula, and post-graduate MFTs have options for seeking additional nutrition education. Finally, more research is needed to examine the role of nutrition in the lives of clients who see MFTs as providers, and how the joint treatment between nutrition professionals and MFTs may impact client outcomes.

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